Tradition and Adaptation

WRITING IN THE DISCIPLINES

Dean Ward

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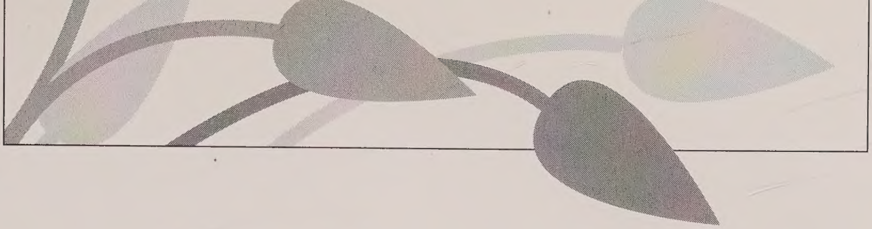

Tradition and Adaptation

WRITING IN THE DISCIPLINES

Dean Ward
Calvin College

Mayfield Publishing Company
Mountain View, California
London • Toronto

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Library of Congress Cataloging-in-Publication Data

Ward, Dean
Tradition and adaptation : writing in the disciplines / Dean Ward.
p. cm.
Includes bibliographical references and index.
ISBN 1-55934-460-1
1. English language—Rhetoric. 2. Interdisciplinary approach in education. 3. Academic writing—Problems, exercises, etc. 4. Business writing—Problems, exercises, etc. I. Title.
PE1408.W3214 1997
808'.042—dc20 96-44134
CIP

Manufactured in the United States of America
10 9 8 7 6 5 4 3 2 1

Mayfield Publishing Company
1280 Villa Street
Mountain View, CA 94041

Sponsoring editor, Thomas V. Broadbent; production editor, Julianna Scott Fein; manuscript editor, Margaret Moore; art and design manager, Susan Breitbard; text and cover designer, Claire Seng-Niemoeller; illustrators, John and Judy Waller; manufacturing manager, Amy Folden; cover art, John Stewart. The text was set in 10.5/13 New Caledonia by G&S Typesetters, Inc., and printed on 45# Miami Book by The Maple-Vail Book Manufacturing Group.

Acknowledgments and copyrights continue at the back of the book on pages 539–540, which constitute an extension of the copyright page.

To the Instructor

The purpose of this book is to prepare students to learn to write as professionals—to move them from an understanding of the fundamentals that they typically learn in first-year composition courses to a point at which they are ready to begin writing in the disciplines.

The premise of this book is that such preparation can best be attained by grounding students in the essential questions common to all writers, teaching them the traditions of writing in the various disciplines, explaining those traditions and the reasons for them in comparison to one another, and nurturing an understanding that traditions and the writers who practice them must be adaptable. The book's title reflects writers' need to balance conventionality and individuality, tradition and adaptation.

The subtitle recognizes the fact that students generally learn to write professionally by learning to write in a discipline, but the formative process that the book advocates might be better understood as writing in *and* across the disciplines. The five main parts concentrate on questions common to all writing tasks; although each part must spend the largest portion of its time surveying disciplinary traditions, the concluding section of each part, the "Adaptations" chapters, perhaps best conveys the book's soul—its conviction that we should know and understand traditions in order to enable ourselves to adapt to each unique rhetorical situation.

The book was conceived through teaching composition students, training tutors in a cross-disciplinary writing center, and training teachers in a writing-across-the-curriculum program. All of us puzzle over the variety and variability of traditions. Students want to know how the writing they do in a first-year composition course will prepare them for writing in other courses and, especially, in their majors; they note differences in the writing they do for various courses but do not understand the reasons for those differences. Tutors, having to equip themselves to work with students from all levels and all disciplines, wonder how they should expect students in genetics, British literature, American politics, and accounting courses to use active and passive verbs, organizational headings, tables of statistical data, and so on. Teachers ask if writing across the curriculum means teaching conformity to or rebellion against the traditions of their discipline—a situation complicated by the fact that their knowledge of disciplinary traditions is often tacit and therefore not easy to explain to their students.

As I attempted to use the lessons learned from those various groups to accomplish the purpose of this book, I focused on providing tools. Chief among those is the basic information about disciplinary traditions, always presented here in the contexts of reasons for the traditions and comparisons to other traditions. I have based this information in current research and in analyses of professional documents from across the disciplines.

The book's exercises and "Workshops" are another set of tools—utilizing dozens of samples of both professional and student writing. The workshops offer four long papers, written for classes in Shakespeare, behavioral ecology, educational psychology, and marketing; the students who wrote the papers kept journals in which they recorded their questions about focus, style, organization, detail, and format. The workshops allow you to dig into the minds of these student writers and to have your students compare their questions and drafts with those of the workshop writers. The instructor's manual provides discussion of possible responses to the exercises and workshops, as well as bibliographies for each of the four disciplinary groups.

The exercises and workshops contain raw materials to use in your course; I intend to use the samples in the exercises and workshops as a basis for class discussions—to see how the ideas in the text play out in real writing. I hope that students will challenge the samples, questioning, for example, the degree to which a political science paper balances its discipline's traditions and its author's inventiveness.

This book rests on its belief in both tradition and adaptation: I hope that my description of tradition is useful and accurate, but I also encourage you to adapt the book to your students' particular needs.

Acknowledgments

Perhaps the most important contributors to this book are the students whose work is reproduced. Thirty-seven students added their voices: Marian Aantjes, Coray Ames, Jamie Barendsen, Monique Bos, Terri Bothof, Jeff Buursma, Tim Carlson, John Deters, Becky Elders, Clare Emigh, Matt Forsythe, Kristin Gootjes, Julie Haagsma, Rodney Haveman, Jodi Huizinga, Karen Hutcheson, Jotham Ippel, Colin Jager, Scott Kirycki, Julie Kraniske, Jessica Lanting, Julie Lubbers, Bradford Mitchell, Kimberly Moll, Neysa Pranger, Joel Schickel, Christina Slenk, Becca Spurrier, Ann Steenwyk, Christina VandenBerg, Christina Van Dyke, Thu Anh Vo, and Becky Watkins. I owe particular thanks to Colleen Henkel, Joe Moore, Clarence Wildeboer, and Marji Yonkman, whose work is the basis for the workshops.

Many individuals—from across the disciplines, in and out of the academy—have contributed ideas, information, questions, criticism, and support. In addition to those whom I have cited in the text, I thank Jim Bradley, Sharon Etheridge, Terry Gray, Debora Kiekover, Rich Nyhof, Rick Plantinga, Rog Rice, Bill Romanowski, Dave Rosenwasser, Mary Rozendal, Kurt Schaefer, Al Shoemaker, Corwin Smidt, Jill Stephen, Bill Stevenson, Barb Timmermans, Pete Vande Guchte, Steve Vander Veen, Randy Van Dragt, Carl Van Dyke, Lynn Walterick, Mark Williams, John Worst, and the many others I have no doubt forgotten. Special thanks go to Steve Timmermans and Charles Young, who read sections of the book and helped me to swim, even if awkwardly, where I was out of my depth. I must also thank Sally Barr Ebest, Gerald J. Alred, Charles T. Brusaw, and Walter S. Oliu, authors of *Writing from A to Z,* for allowing me to use their appendix on documentation styles.

The team at Mayfield Publishing Company deserve a great deal of credit for their consistently excellent work: April Wells-Hayes, the senior production editor; Margaret Moore, my eagle-eyed copyeditor, Susan Shook, who made the instructor's manual possible; and Julianna Scott Fein, who has been a guardian angel of a production editor. The individual other than myself who is most responsible for this book is Thomas Broadbent, Vice President and Publisher at Mayfield. I thank him for his patience, his deft advice, and especially his unflagging faith in the project.

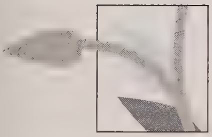
I am grateful to Calvin College for a Calvin Research Fellowship and sabbatical leave that allowed me the time to write much of this book. I also wish to thank my colleagues in the English Department of Calvin College, who have given the daily support and encouragement that makes a large

project seem possible and worthwhile. Warm thanks go to Sherry Levy, who provided many hours of secretarial help, her assistant Angela Ajayi, who typed the bibliographies in the instructor's manual, and, especially, to Jodi Huizinga, my student assistant, who ably and cheerfully prepared the index.

Finally, I dedicate this book to my family—Nancy, Jack, and Min—who graciously understood when I had to say no to a canoe trip, a late-night run to the video store, or my turn with the dishes, and who daily remind me of the need to adapt.

Contents

To the Instructor v
To the Student xxi
  Writers' Choices: Conformity and Individuality xxi
  The Purposes of *Tradition and Adaptation* xxiii
  Your Role in Reading *Tradition and Adaptation* xxiii
  The Structure of *Tradition and Adaptation* xxiv



PART ONE
Focus: Deciding on the Point 1

Chapter 1 Fundamentals: Focus 3

Narrowing 3
  Basics 3
  Complications 4
  Exercise 1.1 Narrowing the Focus 5
Establishing a Thesis 5
  Basics 5
  Complications 6
  Exercise 1.2 Thesis Statements 6
Maintaining Focus 7
  Basics 7
  Complications 8
  Exercise 1.3 Maintaining Focus 8

Chapter 2 Traditions in the Disciplines: Focus 9

Humanities 10

Deciding on the Point 11

Acceptable Topics 11

Exercise 2.1 Choosing Topics in the Humanities 12

Moving from a Topic to a Thesis 13

Establishing the Focus 14

Form and Location 15

Exercise 2.2 Establishing Focus 18

Maintaining the Focus 19

Tools for Maintaining Focus in the Humanities 19

Exercise 2.3 Maintaining Focus in the Humanities 22

WORKSHOP 1: FOCUS IN THE HUMANITIES 23

Natural Sciences 29

Deciding on the Point 29

Practical Constraints on Topic Choice 29 Traditional Topics in the Natural Sciences 30 Focus in a Report of Scientific Research 31 Focus in Review Essays 32

Exercise 2.4 Choosing Topics in the Natural Sciences 33

Establishing the Focus 33

Titles 33 Abstracts 34 Introductions 35

Exercise 2.5 Establishing Focus in the Natural Sciences 35

Maintaining the Focus 37

Materials and Methods Section and Results Section 37 Discussion Section 37 Review Essays 38

Exercise 2.6 Maintaining Focus in the Natural Sciences 38

WORKSHOP 2: FOCUS IN THE NATURAL SCIENCES 43

Social Sciences 51

Deciding on the Point 52

Diversity in the Social Sciences 52

Exercise 2.7 Choosing Topics in the Social Sciences 55

Establishing the Focus 55

Establishing the Value of the Focus 55 Establishing Focus in the Abstract and the Introduction 56 Establishing Focus by Stating the Hypothesis 57

Exercise 2.8 Establishing Focus in the Social Sciences 57

Maintaining the Focus 60

Using Key Terms from Hypothesis to Maintain Focus 60 Maintaining Focus through Structure 62

Exercise 2.9 Maintaining Focus in the Social Sciences 62
WORKSHOP 3: FOCUS IN THE SOCIAL SCIENCES 64

Business 73
  Deciding What to Focus On 74
    Defining Problems and Topics in Business 74
  Exercise 2.10 Defining Problems and Topics in Business 76
  Establishing Focus 77
    Form 77 *Location 78*
  Exercise 2.11 Establishing Focus in Business 79
  Maintaining Focus 82
    Maintaining Focus with Visual Features 83 *Maintaining Focus through Structure 83* *Maintaining Focus with Transitional Words 84*
  Exercise 2.12 Maintaining Focus in Business 84
  WORKSHOP 4: FOCUS IN BUSINESS 85

Chapter 3 Adaptations: Focus 96

Reasons for Adapting 96
Examples of Adaptations 99
Cautions 101
  Exercise 3.1 Adapting the Focus 103

PART ONE CONCLUSION 110

PART TWO
Style: Choosing Words, Composing Sentences, and Creating Tone 111

Chapter 4 Fundamentals: Style 113

Audience 113
  Basics 113
  Complications 114
  Exercise 4.1 Understanding Audience 114

Voice 115
  Basics 115
  Complications 115
  Exercise 4.2 Understanding Voice 116

Tone 116
- Basics 116
- Complications 117
- Exercise 4.3 Understanding Tone 117

Style 118
- Basics 118
- Complications 120
- Exercise 4.4 Understanding Style 121

Chapter 5 Traditions in the Disciplines: Style 122

Natural Sciences 123
- Nouns and Pronouns 124
  - *Nouns 124* *Pronouns 125*
- Verbs 126
  - *Tense 126* *Active, Passive, and Linking Verbs 127*
- Modifiers 128
- Diction 128
- Tone 130
- Exercise 5.1 Analyzing Professional Style in the Natural Sciences 130
- Exercise 5.2 Analyzing a Student's Style in the Natural Sciences 131
- Exercise 5.3 Tone and Style in the Natural Sciences 132
- Exercise 5.4 Experimenting with Style in the Natural Sciences 133
- WORKSHOP 5: STYLE IN THE NATURAL SCIENCES 134

Humanities 137
- Nouns and Pronouns 138
  - *Nouns 138* *Pronouns 139*
- Verbs 140
  - *Tense 140* *Active, Passive, and Linking Verbs 141*
- Modifiers 141
- Diction 142
- Tone 143
- Exercise 5.5 Analyzing Professional Style in the Humanities 144
- Exercise 5.6 Analyzing a Student's Style in the Humanities 144
- Exercise 5.7 Tone and Style in the Humanities 145
- Exercise 5.8 Experimenting with Style in the Humanities 146
- WORKSHOP 6: STYLE IN THE HUMANITIES 147

- Social Sciences 149
  - Nouns and Pronouns 151
    - *Nouns 151* *Pronouns 152*
  - Verbs 153
    - *Tense 153* *Active, Passive, and Linking Verbs 154*
  - Modifiers 154
  - Diction 156
  - Tone 157
  - Exercise 5.9 Analyzing Professional Style in the Social Sciences 158
  - Exercise 5.10 Analyzing a Student's Style in the Social Sciences 158
  - Exercise 5.11 Tone and Style in the Social Sciences 159
  - Exercise 5.12 Experimenting with Style in the Social Sciences 161
  - WORKSHOP 7: STYLE IN THE SOCIAL SCIENCES 162
- Business 165
  - Audience and Purpose in Business Writing 165
  - Nouns and Pronouns 167
    - *Nouns 167* *Pronouns 168*
  - Verbs 169
    - *Tense 169* *Active, Passive, and Linking Verbs 169*
    - *Mood 170*
  - Modifiers 170
  - Diction 171
    - *Parallelism 172*
  - Tone 172
  - Exercise 5.13 Analyzing Professional Style in Business 174
  - Exercise 5.14 Analyzing a Student's Style in Business 175
  - Exercise 5.15 Tone and Style in Business 176
  - Exercise 5.16 Experimenting with Style in Business 177
  - WORKSHOP 8: STYLE IN BUSINESS 177

Chapter 6 Adaptations: Style 181

- Exercise 6.1 Adapting Style 181
- Reasons for Stylistic Adaptations 181
  - Audience 182
  - Purpose 184
  - Voice 185
- Examples of Effective Adaptations 187

Cautions 189

A Little Goes a Long Way 190

PART TWO CONCLUSION 192

PART THREE
Organization and Coherence: Arranging and Connecting the Parts 195

Chapter 7 Fundamentals: Organization and Coherence 197

Organization 197
- **Basics** 198
- **Models** 198
  - *The Thesis-Subpoints Model 198* *Models Based on Patterns of Logic 199* *Other Common Models 199*
- Exercise 7.1 Using Models for Organizing 200
- **Complications** 201
- Exercise 7.2 Problems with Organizing 203

Coherence 203
- **Basics** 203
  - *Devices for Creating Coherence 203*
- Exercise 7.3 Using Transitions to Create Coherence 204
- **Complications** 205
- Exercise 7.4 Revising to Improve Organization and Coherence 205

Chapter 8 Traditions in the Disciplines: Organization and Coherence 208

Business 209
- **Large-Scale Organization** 210
  - *Organization Based on Type of Document 210* *Organization Based on Audience Response 210*
- Exercise 8.1 Organizing a Business Letter 212
  - *Organization Based on Purpose 212* *Organization of Long Reports 213*

Exercise 8.2 Organizing Information in the Appropriate Sections of a Business Report 214

Organization within Sections, Subsections, and Paragraphs 215

Organization within Sections and Subsections: The Body of a Report 215 *Organization within Paragraphs 217*

Coherence 218

Coherence on the Large Scale 218 *Coherence at the Paragraph Level 219*

Exercise 8.3 Organization and Coherence within the Body of a Short Report 220

Exercise 8.4 Organization in Business 222

WORKSHOP 9: ORGANIZATION AND COHERENCE IN BUSINESS 222

Humanities 225

Large-Scale Organization 226

Organization of Critical Essays 226 *Typical Features of Large-Scale Organization in the Humanities 230*

Exercise 8.5 Analyzing and Revising for Thesis and Organization 231

Organization within Sections, Subsections, and Paragraphs 236

Organization within Sections and Subsections 236 *Organization within Paragraphs 237*

Exercise 8.6 Organizing a Paragraph 239

Coherence 239

Exercise 8.7 Revising to Improve Coherence 240

Exercise 8.8 Organization in the Humanities 241

WORKSHOP 10: ORGANIZATION AND COHERENCE IN THE HUMANITIES 242

Natural Sciences 244

Large-Scale Organization 245

Content and Purpose in the Major Sections of a Scientific Paper 247 *Large-Scale Organization of a Scientific Review Article 251*

Exercise 8.9 Organizing Information in the Appropriate Sections of a Natural Sciences Report 252

Organization within Sections 253

Abstract 253 *Introduction 254* *Materials and Methods 255* *Results 256* *Discussion 257*

Exercise 8.10 Organizing the Results Section of a Scientific Paper 259

Coherence 259

Exercise 8.11 Using Transitions Appropriately in a Scientific Paper 260

Exercise 8.12 Organization in the Natural Sciences 260

WORKSHOP 11: ORGANIZATION AND COHERENCE IN THE NATURAL SCIENCES 261

Social Sciences 265

Large-Scale Organization 266

A Sampling of Organizational Models 266 Differences between the IMRAD Model in the Natural Sciences and in the Social Sciences 271 Large-Scale Organization of Case Studies 273

Exercise 8.13 Organizing Information in the Appropriate Sections of a Social Sciences Paper 275

Organization within Sections, Subsections, and Paragraphs 276

Organization within Sections and Subsections 276

Exercise 8.14 Organizing a Case Study 278

Organization within Paragraphs 279

Coherence 279

Exercise 8.15 Using Transitions Appropriately in the Social Sciences 280

Exercise 8.16 Organization in the Social Sciences 280

WORKSHOP 12: ORGANIZATION AND COHERENCE IN THE SOCIAL SCIENCES 281

Chapter 9 Adaptations: Organization and Coherence 285

Reasons for Adapting Organizational Traditions 286

Examples of Effective Adaptations 286

Traditional Organizational Hybrids 286

Nontraditional Organizational Adaptations 287

Coherence in Organizational Hybrids 290

Cautions 291

Exercise 9.1 Experimenting with Adaptations 291

PART THREE CONCLUSION 292

PART FOUR

Detail: Making Writing Clear and Convincing 293

Chapter 10 Fundamentals: Detail 295

Kinds of Detail 295

Basics 295

The Nature of Details 296

Complications 296
Basics 297
Purpose of Details 297 *Types of Details 297* *Sources of Details 297* *Quality and Appropriateness of Detail 298*
Complications 298
Exercise 10.1 Using Specific and Concrete Details in Your Own Writing 298

Amount of Detail 299
Basics 299
Complications 299
Exercise 10.2 Using the Right Kind and Amount of Detail 300

Chapter 11 Traditions in the Disciplines: Detail 302

Social Sciences 304
Kinds of Detail 304
Quantitative and Qualitative Research 304 *Kinds of Detail in Quantitative Research—Statistics 308*
Exercise 11.1 Analzying the Use of Statistics 319
Kinds of Detail in Qualitative Research 320
Exercise 11.2 Analyzing Quantitative and Qualitative Details in the Social Sciences 323
Amount of Detail 325
Amount of Detail in Quantitative Research 325 *Amount of Detail in Qualitative Research 327*
Exercise 11.3 Analyzing the Amount of Detail in Social Science Writing 328
WORKSHOP 13: DETAIL IN THE SOCIAL SCIENCES 328

Humanities 330
Kinds of Detail 331
The Relationship between Kinds of Detail and Critical Perspective 331 *Examples, Facts, and Experts 332* *Examples of Details in the Humanities 332* *Complications in Choosing and Presenting Details 334*
Exercise 11.4 Analyzing Kinds of Detail in Student Writing in the Humanities 336
Amount of Detail 339
Exercise 11.5 Analyzing the Amount of Detail in Professional Writing in the Humanities 341
WORKSHOP 14: DETAIL IN THE HUMANITIES 342

Natural Sciences 344

Kinds of Detail 344

Scientific Facts 344 Appropriate and Up-to-Date Detail 346 Quantifiable and Objective Detail 347 Kinds of Detail in Each Section of a Research Report 347

Exercise 11.6 Analyzing the Kinds of Detail in Student Writing in the Natural Sciences 351

Amount of Detail 352

Amount of Detail in the Sections of a Research Report 352
Kinds and Amount of Detail in Review Articles 356

Exercise 11.7 Analyzing the Amount of Detail in Professional Writing in the Natural Sciences 357

WORKSHOP 15: DETAIL IN THE NATURAL SCIENCES 358

Business 361

Kinds of Detail 361

Variety 361 Types of Primary Detail in Business Writing 362 Characteristics of Effective Detail in Business Writing 363

Exercise 11.8 Analyzing the Kinds of Detail in Business Writing 364

Amount of Detail 367

Audience and Purpose 367 Cost 369

Exercise 11.9 Analyzing the Amount of Detail in Business Writing 370

Exercise 11.10 Comparing the Uses of Detail in Various Disciplines 371

WORKSHOP 16: DETAIL IN BUSINESS 371

Chapter 12 Adaptations: Detail 374

Reasons for Adapting Traditional Uses of Detail 374

Examples of Effective Adaptations 375

Standardized Adaptations of Detail 375

Unconventional Adaptations of Detail 377

Nurses and Writing across the Disciplines 380

Natural Sciences 381 Social Sciences 381
Humanities 381 Business 382 Practicality 383

Cautions 384

Exercise 12.1 Adapting Detail 384

PART FOUR CONCLUSION 386

PART FIVE
Format: Crafting the Right Look 387

Chapter 13 Fundamentals: Some Principles of Visual Communications 391

Options: The Elements of Visual Communications 393
- Dots, Lines, and Shapes 393
- Scale and Dimension 394
- Direction and Movement 396
- Tone and Texture 397
- Color 398
- Exercise 13.1 Recognizing Visual Elements 399

Options: The Techniques of Visual Communications 399
- Balance 400
- Contrast 403
- Clarity in Visual Messages 405
- Exercise 13.2 Analyzing Visual Techniques 405

Chapter 14 Traditions in the Disciplines: Format 406

Characters and Spaces, Fonts, Bullet Points, and Text Styles 408
- Characters and Spaces 408
  - *Scale 408* *Contrast 408* *Number of Characters 408*
  - *Spacing 409* *Justified Text 409*
- Fonts 409
- Bullet Points 410
- Text Styles 411
- Exercise 14.1 Analyzing and Designing a Variety of Visual Features 412

Visual Marks of Organization: Visual Dividers, Headings, Headers and Footers, and White Space 412
- Visual Dividers 412
- Headings 414
- Headers and Footers 416
- White Space 416

Exercise 14.2 Analyzing and Designing Visual Marks of Organization 418

Graphic Aids: Tables and Figures 418

- **Tables** 419
- **Figures** 424
  - ***Line Graphs*** *425* ***Bar Charts*** *426* ***Pie Charts*** *427*
  - ***Diagrams*** *428* ***Photographs*** *430*

Exercise 14.3 Selecting and Building Graphics 431

WORKSHOP 17: VISUAL COMMUNICATIONS IN THE DISCIPLINES 432

Chapter 15 Adaptations: Format 435

Limitations and Options 435

Cautions 441

Exercise 15.1 Experimenting with Visual Communications in the Disciplines 443

PART FIVE CONCLUSION: A BRIEF VISUAL REVIEW OF *TRADITION AND ADAPTATION* 444

Appendix: Gathering and Documenting Information 447

Works Cited 532

Acknowledgments 539

Index 541

To the Student

Writers' Choices: Conformity and Individuality

Writers make choices. And, in the enormously complex business of writing, we all face several common sets of choices: To what audience and for what purpose shall I write? What shall I write about? What style and tone will best help me to communicate clearly and convincingly to that audience? How should I organize my materials? How many and what kind of details will make my points clear and convincing? What should my paper look like? Writers ask these questions, in various forms, again and again as they go through the processes of writing. A successful writer develops a large stock of options, analyzes them from many angles, and chooses among them wisely.

However, as you know from your own experience, making choices is rarely simple. For one thing, most of us become stymied by wondering if our choices should conform to standards that our parents and teachers and models give us, or if we should strike out on our own. Let me draw an analogy between your situation as a writer and the situations of two characters in novels by my favorite writer, George Eliot. In *The Mill on the Floss* Maggie Tulliver feels overwhelmed by a life that seems increasingly complex and uncontrollable. She clings to the identity that her past gives her, yet she feels stifled by the rigid traditions of that past. When she asks her pastor for advice on making choices, he tells her that the "relaxation of ties" to one's heritage, to one's identity, leads to "wayward choices." In other words, he says that making wise choices requires recognizing who you are. Maggie is nonetheless trapped between her sensible devotion to her heritage and her determination to avoid living like her bland fellow townspeople, who are swept into oblivion without finding individual identity and thus improving their world. Romola, the main character in another of Eliot's novels, similarly finds herself torn between loyalty to and rebellion against her past. She asks, "Where does the sacredness of duty end and the sacredness of rebellion begin?"

In this book you will face similar questions—though not so dramatically as Maggie and Romola. You are right to think that as you progress from writing in a composition class to writing in the disciplines and then to writing as a professional, your choices will become more and more standardized, more dependent on the traditions of your profession. As you become, for example, a chemist, you will learn the traditions, the conventions that have evolved over the history of that profession—standards for organization, style, and so on. And you will make wise rhetorical choices if you learn well the traditions that chemists practice.

However, you will also find that the traditions do not supply all the answers. At the same time that you are becoming initiated into professional traditions, you will face more and more unique rhetorical situations. These will drive you beyond conventional answers, perhaps even to "rebel" against the constraints of the traditions you inherit. While you are still in college, your teachers may multiply the complexity of your decisions. Some may tell you that if you hope to succeed you should stick to the traditions of your discipline—even if that means writing stilted, impersonal prose. Others will tell you to take chances, defy the conventions in order to speak in your own voice with directness and passion. You must choose between conformity and individuality.

Rather than choosing between those extremes, could you instead conceive of some middle ground, some way of balancing conformity and individuality? Could you not learn to *adapt* the traditions?

Before a writer can adapt, he or she must first understand the reasons for the traditions. If you are a scientist, you may think that you want to abandon scientists' traditional organizational scheme—Abstract, Introduction, Materials and Methods, Results, and Discussion. But before you contemplate changes, you had better know *why* the tradition exists. Only then can you create effective adaptations.

Once you understand some of the reasons for traditions in the disciplines, you will be better able to make effective choices in unique situations. Adaptation in writing begins with the options a writer has at hand; it is generally easier to use a known strategy in a nontraditional manner than to devise some entirely new strategy out of the blue. Thus, many, possibly most, adaptations in writing are what biologists would call "crosses"—hybrids of different disciplinary traditions, offering writers new and unique options.

Remember, crossbreeding does not usually mean that you add characteristics A and B from one organism and characteristics C and D from another and get a hybrid with recognizable A, B, C, D characteristics. The adaptive recombination creates entirely new features—Es, Fs, and so on.

I believe that an ability to adapt, based on a solid understanding of disciplinary traditions and the reasons for them, will be essential to your success. John E. Bassett, in an article entitled "Confronting Change: English as a Social Science?" writes that:

> those best equipped to handle new information will be those who can work analogically with a broad number of models derived from fields at times remote from their own and can relate their work to a variety of contexts—social, economic, geographical, and political, for example. (332)

In this book you will begin to learn the standards for written work that you will inherit in your profession, but you will also learn that effective writers always analyze the unique requirements of a writing task and seek to expand their options for meeting such requirements.

The Purposes of *Tradition and Adaptation*

The preceding section boils down to two essential purposes for this book:

- To nudge you from a "fundamental" knowledge of writers' choices through an understanding of the reasons for basic disciplinary traditions, and thus to a point of preparedness for learning the conventions of your discipline in depth.
- To teach you to adapt as a way of balancing the needs for conformity and individuality.

Your Role in Reading *Tradition and Adaptation*

This book treats you as a person who is preparing to be a professional writer, that is, preparing for a profession in which you will write and in which your effectiveness and success will depend in part on your writing. Although there may be differences between what a teacher of yours requires and the traditions of the profession you hope to enter, I cannot guess what those differences might be. I cannot, therefore, tell you how to get an A on the papers you write for a teacher I do not know. So we will talk about what successful writers in different fields do. In other words, we will focus on the traditions that your instructors are familiar with through their own reading in the disciplines. Your instructors may want you to write nontraditional papers, but they can explain their preferences in comparison to the traditions and options discussed here.

The effectiveness of learning through comparison is also fundamental to the method of this book. I believe that you will learn the traditions of your discipline best if you learn them in comparison to the traditions of other disciplines. Without such comparisons it is difficult to see what the individual traditions are; stood far apart from each other the differences are hard to distinguish. This is why you should read the whole book and not only the sections about the traditions that pertain to your own area of interest.

Another reason to read all the sections is that you should get in the habit of learning from other disciplines. If you are pursuing a major in English, you will rarely use math in your writing; but if you ever do need to work with numbers, you should learn options from people in the sciences, who are expert in using numbers. If you are studying to become a biologist, you will normally write for highly specialized audiences; if you ever need to write for a broader or a nonscientific audience, you should learn how to do that from businesspeople, who probably have the most experience in adjusting to various audiences.

The wisdom of borrowing tools from the experts who regularly use them is, by the way, another reason that the examples in the "Adaptations" chapters are usually examples of hybridized combinations of disciplinary traditions—to show you how you can learn from other traditions.

Finally, as you read this book, you will be asked to think about and practice ways of balancing conformity and individuality in your own writing. Most of all, I hope that you will see yourself as an apprentice professional writer and will develop confidence in your own knowledge and skill.

The Structure of *Tradition and Adaptation*

This book is in five parts, each about a set of choices that all writers must make:

1. **Focus** (selecting appropriate subjects, then focusing and holding an audience's attention on those focal subjects)
2. **Style** (creating an appropriate voice and tone—and thus an effective relationship to the audience—through stylistic choices)
3. **Organization** (arranging and connecting the parts of a piece of writing so as to reveal its essential logic)
4. **Detail** (giving concrete substance to writing, clarifying ideas, and convincing readers with evidence)

5. **Format** (deciding how a paper should look and recognizing that the appearance can reinforce all your other choices)

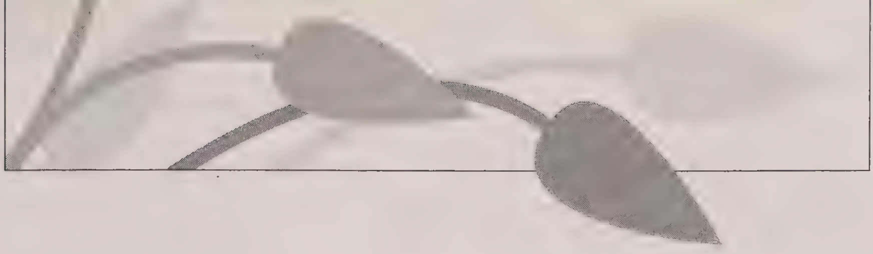
Each of the five parts is then subdivided into three chapters:

1. **Fundamentals** (a short survey of basic ideas addressed in most composition courses and of some complications that trouble students; the "fundamentals" serve as bases for discussing disciplinary writing)
2. **Traditions in the Disciplines** (an introduction to conventional choices of writers in each of four large disciplinary groups— the humanities, natural sciences, social sciences, and business; knowing traditional choices and the reasons for them prepares you to adapt)
3. **Adaptations** (a discussion of ways in which writers adapt the disciplinary traditions they inherit to meet the unique demands of each writing task)

In each chapter are several exercises. These are not simple fill-in-the-blank busywork drills. Normally, in each group of exercises (for example, Exercises 2.4, 2.5, 2.6 in the natural sciences section of Chapter 2), one exercise requires you to do some research and reading at the library, one gives you a sample of professional writing to study, and one gives you a sample of student writing to study. In most exercises you will both analyze writing and suggest options for revisions; for instance, you will study and explain the organization of a part of an essay and then suggest possible changes in the organization.

At the end of each "Traditions in the Disciplines" section you will find a Workshop. These attempt to give you practice in making the variety of choices that you face when writing as a student. You will work with a set of materials gathered by students writing in the disciplines. For example, in the Social Sciences section of each Traditions chapter, you will work with the materials of a person named Marji, who wrote a paper for an Educational Psychology class. You will read the questions she had (about focus, style, organization, detail, and format), analyze Marji's choices, and compare your questions to Marji's.

In short, the exercises and workshops ask you to study the choices of professional and student writers in order to see how they find balance between tradition and adaptation. This activity should help you to develop your own options for finding such a balance—in both the exercises and in all your writing.



PART ONE

Focus: Deciding on the Point

I OFTEN TELL STUDENTS IN COMPOSITION COURSES THAT ABOVE ALL else they must learn to focus. True, disorganization, careless grammatical mistakes, and clumsy sentences distract and annoy, but I am never more frustrated—and therefore never more likely to give a bad grade—than when I find myself wondering, "What's the *point*?"

In Part 1 we talk primarily about three questions that every writer must ask:

- On what will I focus my readers' attention?
- How should I establish that focus?
- How should I maintain that focus?

The "how" questions—your choices among techniques for establishing and maintaining focus—are simpler than the "what" question. Such how-to techniques are among the more obvious conventions in the disciplines. To establish a focus, for example, a scientist (natural or social) might use an abstract to set up the background and hypothesis, an art critic might place an explicit thesis statement at the end of an essay's introductory section, or a businessperson might highlight the main points of a report in a bulleted list.

Choosing your topic and the point (or points) you want to make about that topic is difficult because each field has a set of questions (a set of questions that is always changing) that it considers worth asking and a set of subjects it considers worth studying. I once conducted a grading session for a group of teachers from different disciplines. Everyone graded the same set of papers, and in the set was an essay on American attitudes toward Japan—an essay in the field of political science, one of the social sciences, that had been written for a composition class. Most of the people gave the paper grades ranging from B to A−, but the one political scientist in the group gave it a C−. When we asked why, he explained that the paper was based on a false assumption and was, therefore, at best invalid and at worst irrelevant. The composition teacher had given it an A−; it was clear, well organized, and consistently focused on its thesis statement. But the composition teacher did not know that the topic focused on was one that political scientists do not consider worthwhile, and if the paper had been submitted to a political science teacher, it would have earned a low grade.

Neither of these teachers was necessarily wrong; the point to draw from the story is that all decisions about writing should be made only after considering the **audience** and **purpose.** When you present your readers with an idea or a set of ideas (whether you do so through an abstract, thesis statement, or bulleted list), you implicitly say to them: This is what my paper is about; are you interested? Of course it makes good sense, then, to know in advance what they are interested in—to choose a point that is somehow important for them to read about.

In the disciplines you will discover certain topics that are always important (I will discuss these traditional topics in Chapter 2) and other topics that are at any point in time "hot." We will not be able to go through a list of the current hot topics in each disciplinary group because they are too numerous and they may change before this book gets into print, but you will need to read and listen enough to learn them in your field.

Effective writers make decisions about the point of a whole essay, report, memo, or book in the same way that they make choices between active and passive voice when composing a sentence: They learn the *traditions*—the conventional choices—and in that way prepare themselves to *adapt* in each unique writing task.

1

Fundamentals: Focus

While not all textbooks or teachers of first-year composition use the term *focus,* they do, in one way or another, discuss the processes of **narrowing,** or sharpening, subjects into manageable topics; of **establishing** a thesis (explicitly or implicitly); and of **maintaining** focus by keeping a paper's vision consistently trained on the thesis. This chapter offers a brief review of these three processes.

NARROWING

Basics

Writers begin every project within a given playing field—a **subject** area. They find something to write about within this designated area. A composition teacher may, for example, turn you loose in a subject area like homelessness, racism, or Dickens's novel *Hard Times.*

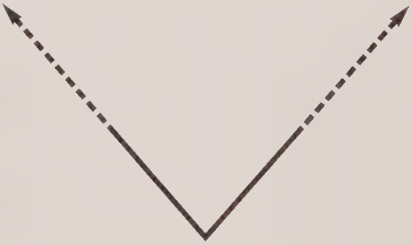
However, because each of these subject areas defines too large a field to write a three- or even thirty-page paper about, you must stake out a **topic** within the subject area. So you narrow

Homelessness	*to*	How reductions in federal aid affect homelessness,
Racism	*to*	The writings of Martin Luther King, Jr., and
Hard Times	*to*	Dickens's view of industrialization in Victorian England.

Complications

How much should I narrow my topic? You must know your length limitations, as well as your purpose and audience, in order to decide just how much you must narrow. The topic on Martin Luther King, Jr., could of course be narrowed down to the concluding paragraphs of King's "Letter from Birmingham Jail." Inexperienced writers sometimes fear that narrowing will give them too little to say, but usually the opposite is true. If you were to try to write about "The Writings of Martin Luther King, Jr.," you could find that topic's breadth paralyzing; it leaves too many decisions, gives too little direction. And if you do not further narrow the topic, you might be reduced to making broad generalizations about King and quickly running out of things to say. Focusing on just the concluding paragraphs of the "Letter from Birmingham Jail," however, frees you to explore King's every word, as well as the precise historical context in which they were written. I once knew a student who could write only a ten-line paragraph on "How to Make a Peanut Butter and Jelly Sandwich" but wrote three pages when she narrowed her topic to "Selecting Ingredients for the Perfect Peanut Butter and Jelly Sandwich." She went into detail on types of breads, jellies, and peanut butters and found more than enough to say.

How broadly should I begin my introduction? You, like many others, may have been taught the inverted-pyramid model of introductory paragraphs—begin with general ideas and narrow toward a specific point. But this model leaves an important question unanswered: How general should the beginning be? Consider this sketch of an inverted pyramid—with its sides stretching off indefinitely:



At what distance from the point at the bottom do you place the horizontal line that marks the beginning of your paper? If the horizontal line is too far away from the point, the arms of the pyramid may have spread out to embrace massive generalizations; the first sentence of the introduction could be as broad as "We are all humans." The inverted pyramid model allows students to begin essays with statements like "Ever since the beginning of time . . ." or "Humans have always. . . ."

A helpful guideline is to place the horizontal line, your beginning, only as far away from the point as you need to find common ground between yourself and your audience. So, taking the example of Martin Luther King, Jr., you do not need to move all the way back to "Racism has long plagued our country"; instead, find common ground. You know that the average college-student audience knows of King's work but may not know about his "Letter from Birmingham Jail," so meet your audience where their knowledge and your paper topic intersect: "Among the most important and revealing of King's writings is his 'Letter from Birmingham Jail.'"

Exercise 1.1 Narrowing the Focus

A student drew up the following list of ideas for an essay. Write an introduction for the essay, including a thesis statement. You will need to decide which, if any, of the ideas need to be eliminated and which, if any, need to be narrowed.

> I enjoy college, but I am not sure that it will lead to a good job.
>
> I wonder if I shouldn't quit school for a while, get some job experience, and figure out what I want to do with my life.
>
> I do not like computers, and it seems as if they are necessary for all jobs these days.
>
> I don't mind hard work, but I also expect an opportunity to take advantage of my education.
>
> On the other hand, blue-collar jobs are less stressful; I could work on an assembly line to make money and have hobbies to exercise my mind and keep me happy.

ESTABLISHING A THESIS

Basics

A **thesis,** as described in most composition textbooks, is a generalization that summarizes a writer's ideas, the central point of an essay. The thesis is not a question to be investigated; it is the central conclusion, the main assertion that a writer has drawn from his or her research into a topic. By focusing attention on the central point, a thesis gives a paper a sense of order.

Think of the visual metaphor used in the word *focus:* an effective writer will give the audience a sharply focused message that will direct and fix their gaze. The philosopher José Ortega y Gasset distinguishes between "two distinct ways of seeing" (109) that may help us to understand the value of focusing on a thesis. Pick up an object, your pen or pencil, and hold it a foot or so in front of your eyes. You will see that the pen is sharply focused and that the rest of the field of vision—the background—is blurred; you are aware of this background, but it is visually less important than the focused object you hold in your hand. A thesis can serve as the single object that organizes a reader's perceptions and indicates what is focal amid the information and ideas in an essay.

Complications

Should I state my thesis explicitly, or should I make the thesis implicit? A clear, precise thesis statement prepares readers for what is to come; it also establishes a contract between writer and readers, indicating what the paper promises to deliver. In most cases, it makes sense to establish this contract before you and your reader begin to work together, but not always. Sometimes writers play a game with the audience, a game that would be given away by an explicit thesis statement. You might be familiar with Swift's "A Modest Proposal," which suggests that the British government should deal with the Irish poor by eating their children; you can well imagine how an explicit thesis statement would deflate that essay.

I also know of several teachers who ask students to write stories with an implicit thesis; that is, the story should have a unifying message that is clear to the audience even though it is not stated.

Even if you do choose an implicit thesis, you should construct a thesis statement for yourself; always seek the clarity of focus that a thesis provides.

If I do include an explicit thesis statement, where should I place it? Normally, readers look for a thesis statement at the end of the introduction; in most short essays it appears at the end of the first paragraph. Because your readers expect that, you should have a good reason if you choose not to place the thesis statement there.

But there are some good reasons for varying the placement of the thesis statement. In some arguments the writer sets the audience up to think in one direction in order to turn the tables on them at the end, so the thesis must be reserved until the end. A paper that carries the reader through the author's thought processes in order to lead up to the conclusion will also present the thesis at the end. Some papers even present parts of the thesis at strategic points along the way and then bring the thesis all together at the end.

Exercise 1.2 Thesis Statements

Consider the following opening paragraphs of essays written for first-year composition classes. Which paragraphs have thesis statements that you consider effective? Why are they effective? Do any of the paragraphs have no thesis statement?

1. I currently reside in Shultze Hall, and it has been a pleasant enough residence. However, I have a concern. I am not satisfied with the Open House policy. It is excessively restrictive and needs to be relaxed.

2. As young people we are faced with choices every day. Some are very important to us and some we make almost subconsciously because they seem so natural. I recently moved to college where I have experienced many changes in my lifestyle; through these changes I have realized that choices are necessary to adapt to and cope with a new life situation.

3. In an ever-changing world, it is not surprising to see society's attitudes toward single mothers changing as well. The biggest changes came between 1940 and the 1970s, when society took significant steps toward accepting single mothers. Today we see society continuing to move toward a more accepting attitude of women who, for whatever reason, have become mothers outside of a marriage relationship.

4. "Just wait until your father gets home!" This may have been a common phrase to young people growing up in the early 1970s, but in the 1990s approach, the number of working and career-oriented mothers is increasing, and many children are now being told, "Wait until your mother gets home." Has this change led to a change in fathers' roles?

MAINTAINING FOCUS

Basics

The visual metaphor in the word *focus* can also help you see how to keep an audience's attention directed where you want it. Imagine watching a play at a theater: All a character has to do to get attention is move to the foreground. However, if that character stays toward the front of the stage but doesn't do anything, while other characters pick up the action and move it to some other part of the stage, our attention will move away and forget the character in the foreground. To keep an audience's attention focused, writers keep the focal point in the foreground and in the action. A thesis is kept in the action by keeping the audience aware of how it is being developed—through a unified and coherent structure of ideas and information.

Common techniques for maintaining focus include

repetition—writers may repeat the central idea or one of its parts, repeat key terms or their synonyms, and repeat images or quotations that capture the essence of the main idea;

pattern—a pattern can keep readers' attention focused by letting them know what to expect (if your thesis statement sets out three main points and your paper begins each new paragraph with a clear reference to one of those points, in order, readers will be able to follow the pattern and keep focused).

Complications

How can I keep my main point before my readers' eyes without its becoming annoying or obvious? Repeating a thesis in every paragraph will make the audience feel as if the writer is right in their face, condescending and a bit garlicky. You must learn to maintain focus without being repetitious and obvious. Repeating key words or their synonyms, creating an easy-to-follow structure, and crafting effective topic sentences for each paragraph are among the tools for keeping a sharp focus, but above all an audience will hold its focus only if you hold its interest.

Exercise 1.3 Maintaining Focus

The selection that follows is taken from the opening paragraphs of the introduction to a book called *The Ascent of Man,* by mathematician Jacob Bronowski. It explains why Bronowski chose the title that he did, and in doing that the passage establishes the book's focus. Although the purpose of the passage is to establish focus, it also offers effective models of ways to maintain focus. What techniques does Bronowski use to consistently focus our attention on his main point before he finally articulates his thesis in the last two sentences?

> Man is a singular creature. He has a set of gifts which make him unique among the animals: so that, unlike them, he is not a figure in the landscape—he is a shaper of the landscape. In body and in mind he is the explorer of nature, the ubiquitous animal, who did not find but has made his home in every continent.
>
> Every landscape . . . is full of . . . exact and beautiful adaptations, by which an animal fits into its environment like one cog-wheel into another. . . . But nature—that is, biological evolution—has not fitted man to any specific environment. On the contrary, by comparison with [animals] he has a rather crude survival kit; and yet—this is the paradox of the human condition—one that fits him to all environments. Among the multitude of animals which scamper, fly, burrow and swim around us, man is the only one who is not locked into his environment. His imagination, his reason, his emotional subtlety and toughness, make it possible for him not to accept the environment but to change it. And that series of inventions, by which man from age to age has remade his environment, is a different kind of evolution—not biological, but cultural evolution. I call that brilliant sequence of cultural peaks *The Ascent of Man.* (19–20)

2

Traditions in the Disciplines: Focus

One clear mirror of the disciplinary differences regarding focus is the thesis statement. In most composition classes the thesis statement is among the most sacred of cows. Every essay must have a clear thesis. And, as we saw in Chapter 1, a thesis can be a powerful tool for focusing an essay and giving it both clarity and purpose. In the disciplines, however, a thesis statement is not always used. Papers in the social and natural sciences have hypotheses, rather than theses; hypotheses are something like tentative theses (we will discuss the distinction between theses and hypotheses in the introduction to the section on the natural sciences). Scientific papers may also have several related hypotheses. Similarly, a business report may focus on a group of related problems and offer a series of recommendations to solve the problems—with nothing resembling a thesis statement. The fact is that written documents in many disciplines—and in the professions for which your major is training you—have too complex a set of problems and solutions to summarize in a thesis statement. Your notions of focus, in other words, should broaden as you read this chapter.

On the other hand, you will see that a discipline's beliefs about what is worth focusing on will constrain you to a narrower set of acceptable topics than most students are allowed to explore in composition classes. In different disciplines, and in various schools of thought within a discipline, you will find accepted beliefs about what can be known. In the introduction to Part 1, I said that your choices of topics will depend on what your audience is interested in knowing. It also follows that what they are interested in knowing is strongly influenced by what they believe it is possible to know.

You are going through your apprenticeship as a professional writer at a time when many disciplines are challenging old beliefs and generating new ones. In the social sciences, for example, many researchers are abandoning the belief that one can discover objective truth, which was for many years the stance of those who conducted quantitative research. So qualitative research, which is more interpretive and less dependent on statistical validity than quantitative research, is getting a lot more attention and respect than it did just a decade or so ago. Others are advocating combinations of qualitative and quantitative research methods. (In Chapter 11, when we discuss kinds of details used in the social sciences, I will offer a longer explanation of quantitative and qualitative kinds of research.) The changing times you live in will probably compel you to make more complicated decisions about topics than people in your discipline did just a few years ago.

For the time being, though, let me simplify: This chapter is fundamentally about the *content* that a writer chooses. Each writer in the disciplines asks, What topics do the people in my field consider appropriate and worthwhile to give attention to? The answer to that question may change over time, but the question will remain.

In each of the four sections that follow, we will talk first about how people in the disciplines select a topic. Knowing what topics are considered worth studying and why requires understanding how the various disciplines conceive of their purpose. Next we will consider methods commonly used to establish the focus—that is, methods that articulate the point. Finally, we will survey some disciplinary methods for maintaining the focus so that the audience's attention does not stray from the point.

HUMANITIES

In the humanities, there is almost always a thesis, usually expressed in an explicit thesis statement. People in the humanities write in order to enrich our understanding of human arts—music, painting, literature, philosophy, and so forth. A literary critic does not look at a poem, for instance, in the same way a chemist looks at a type of atomic bond. The critic will not attempt scientific measurement of the poem in order to derive measurable and repeatable findings about what sort of thing the poem really is. Rather, the critic's purpose might be to unfold the richness of the poem, to illuminate some of the ways in which it creates opportunities for meaningful responses in a reader.

Because of this purpose, the critic carries the responsibility and authority to say what he or she believes to be true about the poem, without assuming that others must come to the same conclusions. Therefore, the critic assumes a responsibility to tell the reader exactly what it is that he or she believes—succinctly, in a thesis.

From these introductory comments you should learn something about purpose in the humanities, but you should also learn that all decisions about what topics are valued in the different disciplines, and consequently all decisions about how to establish and maintain focus on the topic of a paper, are based on a sense of purpose.

Deciding on the Point

In business your topics are decided for you—by your supervisors, company finances, and other people and situations. In the sciences, especially the natural sciences, topics are usually determined by the lines of inquiry begun by earlier studies. In the humanities, however, you have a great deal of freedom in selecting ideas to focus on. That freedom can make choosing topics difficult; teachers in the humanities often spend much time working with students on selecting and focusing topics.

Acceptable Topics Choices in the humanities are so broad that even your teachers may not be able to give you concrete advice about the kinds of topics that professionals in the field find worth writing about. Nonetheless, writing about the arts—literature, music, the visual arts— generally focuses on two issues of debate: interpretation and theory (Toulmin, Rieke, and Janik 353–55). Interpretation is concerned with understanding a work of art: We observe that a character acts in a certain way, and we want to know how the character's behavior contributes to the meaning of the work, so we write an interpretation of the character's behavior. A theoretical topic may consider the relation between, say, a general theory of literary structure and the structure of a particular novel. A theorist could also focus on the relations between a piece of art and the culture in which it was produced: How does a culture that believes in relativity interpret an artist who believes in absolutes? Because theoretical issues involve broad knowledge of a field and of the theories applied to the field, students in the humanities more often write interpretive than theoretical essays.

A student in a literature class will need to know what approaches to literary interpretation are favored by professionals. The authors of "The Rhetoric of Literary Criticism" studied a set of articles in literary criticism and discovered a set of common *topoi*. The word *topoi* comes from classical rhetoric, and it originally meant "places." So we could translate it to mean places or locations of thought—in other words, common subject areas. Here is their list:

- **Appearance/Reality** Critics look for meaning beyond the surface, the deeper, "hidden" meanings of a text.
- **Everywhereness** Critics try to find elements of a text that appear everywhere in the text (and that no one else has found).
- **Paradox** The goal is to find elements that seem to be in irreconcilable opposition and weave them into a surprising and wonderful marriage.
- ***Contemptus Mundi*** Critics share with their audience a sense of despair over the condition of society.
- **Paradigm** A critic finds a pattern in a work of literature that reflects some pattern in the "real" world. (Fahnestock and Secor 84–89)

If you have taken literature classes, you probably recognize some of these subject areas from class discussions and lectures.

While it is helpful to know the kinds of topics favored in a field, remember that the various disciplines in the humanities favor different topics, and even within a discipline privileged topics will change over time. In a recent lunchtime discussion in our English department one person asked, "What do you think is becoming the dominant critical approach these days?" Someone answered, "Ideological criticism—feminism, for example." A third chipped in, "But we haven't really moved away from poststructuralist criticism; it still heavily influences ideological criticism." And so on. Now I don't know if these people were accurate in their speculations, but what you can learn from their conversation (other than confirmation of your belief that English teachers probably are not much fun to have lunch with) is that the topics professionals focus on are always changing.

Listen, therefore, for the kinds of topics that your teachers talk about in class, and ask them for advice on acceptable topics if you feel uncertain.

Also be reassured that the old favorites are always around (as the list from "The Rhetoric of Literary Criticism" makes clear). A former professor of mine called them "chestnuts." I remember going to talk with him about a topic for an upcoming paper. I said something like, "I'm really interested in this identity thing we've been talking about." He leaned back in his chair, smiled wryly, and drawled, "Yeah, that's a real chestnut."

Exercise 2.1 Choosing Topics in the Humanities

Find at least three journals—all from the same discipline within the humanities (e.g., English, art, music, or philosophy); perhaps choose a field that you are considering for a major. These should also be journals that have been published for at least twenty years. Look at the introductions of the essays in at least two recent issues of each of the three journals, and list the topics of all the essays. Now find issues of the same journals that are at least twenty years old (selecting issues published in the year of your birth may make the exercise more interesting for you). Again, list the topics. What similarities and differences do you find between the topics in the recent and old issues? How much breadth of choice does it seem to you is given to people in the field you chose, now and twenty years ago? What are and were the most often chosen kinds of topics?

Moving from a Topic to a Thesis Finding an acceptable topic was not my most serious problem when I went in to see my professor; rather, I should have been concerned about narrowing and focusing. "Just what, in particular, do you want to say about identity?" asked my prof. Often, when we are enthusiastic about a course, we see the grand connections, the great chestnut topics, and we want to study those grand visions in our papers. But we have to come back down to earth and decide what we can effectively discuss within the time and length limitations that face us.

Think about the processes that you or your friends and teachers use to move from chestnut topics to a focus that you can articulate in a thesis statement. There is no single correct method to follow. Some people like to brainstorm until they come up with a tentative thesis; others like to start writing and then go back and see if there's a thesis buried in what they have written; and many of us do something different for almost every paper we write.

Keep in mind the length limitation that you are given, and remember that even a long college paper won't give you enough space to write about "Everything the Victorian Novelists Had to Say About Identity." A very good student once told me that he was interested in the way women novelists of the Victorian period were received by their audiences: Why were there so many successful women writers, and why did many of them use male pseudonyms? We talked about chestnuts for a while, and I sent him off to the library. About a week later he told me that he had decided to write on Charlotte Brontë's reception among critics who reviewed her books as they were published. Another two weeks went by, and we had a small group conference to talk about rough drafts. With me and three other students, my Brontë fan talked about his paper. It had become a short history of how critics responded to Brontë's novels. When he finished, someone asked what his point was. He hesitated, looked a little frustrated with us, and, when I asked him if he just wanted to write a simple account of Brontë's reception and not be bothered with a thesis, he said, "Well, yes."

The group would not let him off that easily. Remember that perhaps the central purpose of writing in the humanities is to interpret and thus enrich. By failing to take a stand, to state a position, to defend a thesis, he was trying to leave part of the work of interpretation up to the reader. He stopped by my office the next day to talk about possible revisions, and a week later he turned in a paper focused on this thesis:

> Because Brontë's contemporaries were too concerned about strict definitions of what a novel is, they failed to discover that the loose plot structures they criticized play a vital role in the development of the novels' characters and the readers' emotional attachment to those characters.

The specificity of the thesis gave the paper a clear purpose and helped to earn the student a very strong A for the paper.

As the heading of this subsection indicates, you must move from a **topic**

I want to write *about* **Brontë's reception.**
or I want to write *about* **Kierkegaard's *Philosophical Fragments*.**
or I want to write *about* **women's fashion and politics after World War I.**

to a **thesis:**

Because Brontë's contemporaries were too concerned . . . (as in my student's thesis statement, just above)
or The irrational leap of faith, says Kierkegaard's character, is the incomprehensible essence of Christianity.
or Hair fashions in 1920s France constituted a political language that served as a maker as well as a marker of the modern woman, figuring in a larger struggle for social and political power.

You see that the boldface topics are noun phrases, things. But the thesis statements (the latter two are from essays we will look at in the next section) are complete sentences, statements of your position, of your belief.

Establishing the Focus

The preceding section focuses our attention on thesis statements. Generally, your teachers in the humanities will expect you to have a thesis statement and to place it at the end of your introduction. But not always.

Professionals in the humanities are fairly consistent about advising students to use explicit thesis statements, but be warned that it is often difficult to find such explicit statements in the professionals' own writing. Almost always, however, a writer in the humanities can tell you what the thesis is, and a reader can detect at least an *implicit* thesis in a well-written essay.

However, when students do research and read essays in the humanities that have no explicit thesis, they can mistakenly perceive a green light for writing unfocused, incoherent prose. That is probably part of the reason for teachers in the humanities to be as strict as they often are about requiring explicit theses.

But I do not want to exaggerate the difference between student and professional writing. Let's look at some examples of both to see how and where people in the humanities establish focus.

Form and Location The other main sections in this chapter (natural sciences, social sciences, and business) separate the discussions of form and location for establishing focus, but here they are joined because they are so closely related. The form used to establish the focus—a thesis statement or a statement of purpose—often signals the end of the introduction. Among the writing of the four disciplinary groups that we are studying, only writing in the humanities does not normally require a formal introduction, marked as such with a heading. However, even though writers in the humanities do not use the formal introduction of essays that we see in the natural and social sciences or the executive summary that appears at the beginning of business reports, they have some well-established traditions for creating a focus early in an essay. Statements of purpose, or intention, are common. Here is such a statement—from an essay in literary criticism:

> Although both of these views contribute to a greater understanding of Hawthorne's recasting of traditional allegory, *I shall suggest* yet another explanation. . . .

Another from an essay in a journal of history:

> *I will argue* that postwar observers interpreted the new fashion. . . .

And from a student's essay for a philosophy class:

> *This essay will examine* one such refutation. . . .

Statements such as these often specify the subpoints to be discussed and the organization of those points.

> *In this paper I will argue* that collapse of the Soviet Union was inevitable; I will support my argument with *evidence from economics, religion, and the history of ethnic differences in the former U.S.S.R.*

Also common are what we can call embryonic thesis statements. At the end of the first paragraph of an essay written for an introductory philosophy class we find the following statement:

> Although what Climacus [the name of the fictitious character that the philosopher Søren Kierkegaard creates for his narrator] is trying to say is often buried beneath a thick crust of philosophical jargon, by chipping away one can find the pervading theme of the *Philosophical Fragments* to be the difficulty of becoming a Christian.

The last two sentences of the paper (which, by the way, received an A) then state the fully developed thesis:

> It is just such a leap of faith, the rejection of rational thought, that Climacus finds impossible to understand, perhaps because one can only understand a conversion if one is looking back after having been converted. To others, it is merely nonsense.

It is as if the thesis develops and is given birth through the argument presented in the paper.

A published article on American cultural history uses a similar form to establish its position on why the Jack Benny radio show was so popular in the 1930s and 1940s. Here is the last sentence of the first paragraph:

> Such structural ambiguity helps explain the show's tremendous popularity; it allowed listeners positioned differently in the culture to choose their own understandings of the show's meanings and to identify with the characters in multiple ways. (McFadden 113)

The article ends with the following two sentences (notice how similar these two sentences are to the two closing sentences of the paper on Kierkegaard) in their full development of the thesis statement:

> The show consistently included ambiguities of form and content that allowed listeners to negotiate with the program's texts to create their own understandings of the characters and their actions and thereby to accept or reject the show's apparent messages. In this way the Jack Benny show could be enjoyed by a wide spectrum of listeners, all trying to make sense of a world in economic and social disorder. (McFadden 134)

This strategy allows a writer to establish a fairly clear focus at the beginning, to further develop and clarify it through the paper, and then to reiterate the thesis statement in its full glory at the end, tying it, as do the closing sentences of our two examples, to some wider significance.

Often writers in the humanities do propose an explicit and fully developed thesis statement at the end of the introduction. An article on fashion-ably short hair in France after World War I attaches a well-coiffed embryonic thesis to the end of the first paragraph:

> By claiming the bobbed-cut Joan of Arc as their mascot, these young women grounded their quest for "liberation" in the rich, tangled mainstream of French history. (Roberts 657)

But the whole introduction runs to over eight pages; its end is marked by an extra line of space. Five pages into the introduction a statement of intention—in the familiar "I will argue" form—appears. And the end of the introduction reads as follows:

> When the new fashions were widely interpreted in this way [as a "visual analogue of female liberation"], they became invested with political meaning. To wear them was to challenge traditional notions of gender difference and to arouse sympathy for freedom and autonomy for women. In other words, fashion constituted a semi-autonomous political language that served as a maker as well as a marker of the modern woman. Postwar fashion figured in a larger struggle for social and political power. (Roberts 665)

These three sentences, woven from threads running throughout the introduction, work together to focus our attention on the thesis as we move into the remaining nineteen pages of the article.

Students' papers, which are usually quite a bit shorter than the preceding example, must be more economical in establishing a focus. Here is the last sentence of the first paragraph of a seven-page final exam essay written for a class on the English novel:

> In several of the novels we have read this semester men play the part of the helpless victim, believing as if women have maliciously beguiled them; however, the women, though not helpless tools in the hands of fate, have very little control over their situations and are themselves victimized by circumstances.

In an essay exam it is especially necessary to establish a focus concretely and quickly.

Finally, we will consider an example of an essay that does not use an explicit thesis. The essay discusses the autobiography of Anthony Trollope, a Victorian novelist, and the author, one of the top scholars on Trollope, offers no thesis statement. Yet the focus is clear: The title, "Truth and Fiction in Trollope's *Autobiography*," directs our gaze to the main question, and the examples written about are all of errors and omissions in the *Autobiography*. At the same time, the author, R. H. Super, probably expects that his audience, readers of the journal titled *Nineteenth-Century Literature*, knows that he published his own biography of Trollope and that he relied heavily on Trollope's *Autobiography.* Consequently, readers have no trouble focusing on the implied thesis that Trollope's *Autobiography* is not always factual but is nonetheless an indispensable book for students of Trollope. And the thesis is not really as important or interesting as the particular pieces of evidence of Trollope's errors and omissions—because they enrich our understanding of Trollope.

Exercise 2.2 Establishing Focus

The passages reprinted here come from professional publications in the humanities. Study the ways by which the authors establish focus. Which passages employ thesis statements? Do they also use other techniques to help establish the focus? If any do not have a thesis statement, do they use other means to establish focus? Select one passage that you find especially good at establishing its focus and explain what makes the focus effective.

> With the exception of astronauts like Neil Armstrong . . . , heroes in the latter part of the twentieth century, say many observers, are practically nonexistent or watered-down versions, at best, of their nineteenth-century forbears. Certainly Watergate has undermined the possibilities of political heroism; strikes for astronomically high wages and percentages of television revenues have tarnished the images of sports heroes; and the dearth of new frontiers leaves few opportunities for the would-be hero as adventurer. Thus, people talk increasingly about anti-heroes and non-heroic actions, as though that is all we have left. Because we are living in an age where old-fashioned heroism is as out of date as the heroes who shaped the meaning of the word . . . , we need more than ever the illusion that heroes still exist, which is best provided by that supreme illusion-maker, Hollywood. . . . (Patrick D. Anderson, "From John Wayne to E.T.: The Hero in Popular American Film" 16–17)

> I am trying in this book . . . to establish certain general conclusions about a particular segment of American society.
>
> The Negro as a slave is one thing. The Negro as an American citizen is quite another. But the *path* the slave took to "citizenship" is what I want to look at. And I make my analogy through the slave citizen's music—through the music that is most closely associated with him: blues and . . . jazz. . . .
>
> I mean, we know certain definite things about the lives of the Negro slaves. We also, with more certainty, know things about the lives of the contemporary American Negroes. The one referent to the drastic change in the Negro from slavery to "citizenship" is his music.
>
> There are definite *stages* in the Negro's transmutation from African to American: or, at least, there are certain very apparent changes in the

> Negro's reactions to America from the time of his first importation as slave until the present that can, I think, be seen—and again, I insist that these changes are most graphic in his music. . . .
>
> And the point I want to make most evident here is that I cite the beginning of blues as the beginning of American Negroes. (LeRoi Jones, *Blues People* ix–xii)

> It is the frequent response of readers who are making their first acquaintance with Jane Austen that her subject matter is itself so limited—limited to the manners of a small section of English gentry who apparently never have been worried about death or sex, hunger or war, guilt or God—that it can offer no contiguity with modern interests. This is a very real difficulty in an approach to an Austen novel, and we should not obscure it; for by taking it initially into consideration, we can begin to come closer to the actual toughness and subtlety of the Austen quality. The greatest novels have been great in range as well as in technical invention; they have explored human experience a good deal more widely and deeply than Austen was able to explore it. It is wronging an Austen novel to expect of it what it makes no pretense to rival—the spiritual profundity of the very greatest novels. But if we expect artistic mastery of limited materials, we shall not be disappointed. (Dorothy Van Ghent, "On *Pride and Prejudice*" 99)

Maintaining the Focus

Tools for Maintaining Focus in the Humanities Professional writers in the humanities use many of the same techniques for emphasizing, and thus for focusing on, items in a piece of writing that students use in essays for composition classes (see Chapter 1). They set up and repeat key words—perhaps the central terms from a thesis statement, or their synonyms. They offer a logical organization so that readers will know how each part of their essay develops and contributes to the focus, and they connect the parts with clear transitions—directional signals—that ensure that the readers' attention does not stray from the focus. They also choose concrete details and images that will reinforce and clarify the main idea.

Writers in the humanities must use fairly subtle techniques for maintaining focus. A music critic traditionally does not have the option of placing boldface headings in an extra-wide margin, as a director of marketing might do. Think of the situation in terms of the stage metaphor we considered earlier. To keep readers' attention focused on an idea, the writer must keep that idea in the foreground and in the action. Imagine the ideas of a piece of writing as characters on the stage and the writer as a narrator standing at the side of the stage holding a microphone. The narrator/writer for a piece of business writing announces her main character, saying, "Here's Profit and Loss, the main character of our drama." During the entire play, Profit and Loss holds up a large sign that reads, "Profit and Loss, main character." When other characters enter, the narrator announces them and they hold up signs indicating exactly how they affect Profit and Loss.

When the humanities cast takes the stage, the narrator probably identifies the main character (in a statement of intention or of the thesis), but none of the characters hold up any signs, and several characters may be on the stage at once. The audience will have to follow the logic of the conversations and the narrator's unobtrusive announcements of each act and scene to see how each character relates to the main character. As a writer in the humanities, you will need to recognize the subtlety of the traditions—the conventional choices—and utilize many techniques simultaneously to maintain focus.

Let's look at two examples of authors effectively maintaining focus: the published article on postwar French fashions and the student essay on Charlotte Brontë.

The article on hair fashions sets up the structure of the whole argument in its introduction. There it establishes four main parts:

1. Historical contexts—what was happening in fashion and people's response to new hair fashions in 1920s France,
2. Negative interpretations of the short-hair fashion—a reflection of postwar social upheaval,
3. Positive interpretations of the hair fashions—a statement of feminine liberation, and
4. The conclusion that the new fashions created emblems of political power.

So the paper consists of six sections, one each on these four parts plus an introduction and a conclusion. The organization thus helps to maintain the focus; readers always know what part of the argument they are in.

The six main sections are set off from one another only by a line of blank space and small capitals for the first several words of each section (these were probably the choices of the journal's typographer and not the article's author). The choice of words to put in small caps (again, probably not the choice of the author) is important. For the first section an entire sentence, the first sentence of the essay, is capitalized. For each following section only the noun phrase that is the subject of each section's first sentence is capitalized. Here is the beginning of the first sentence of the third section (on negative interpretations of the new fashion):

> THE MOST VOCIFEROUS CRITICS OF THE NEW FASHION included traditional conservatives such as . . . (Roberts 668)

The subject of a sentence usually carries information that the reader is familiar with, and the predicate then goes on to give new information. So the decision to highlight the sentence subject at the beginning of each new section helps to create a transition from old to new information at the same time that the highlighted subject tells us the main idea of the new section. This subtle and unobtrusive technique effectively maintains focus.

Writers in the humanities also know that readers tend to look at beginnings and endings more carefully than other parts of a text. Writers take advantage of this attention, crafting sentences at the beginnings and ends of sections and whole papers that sharpen the focus. The last sentence of the essay on postwar French fashions reiterates the whole paper:

> The fashions of the modern woman became central to the cultural mythology of the era, instilling at once envy, admiration, frustration, and horror, because they provided both a visual language for upheaval and change and figured in a political struggle for the redefinition of female identity. (684)

The reader finishes the article with a concentrated gaze.

The student essay on Charlotte Brontë is ten pages long and has no visible breaks to indicate main sections. It is organized to follow the logic of its thesis statement:

> Because Brontë's contemporaries were too concerned about strict definitions of what a novel is, they failed to discover that the loose plot structures they criticized play a vital role in the development of the novels' characters and the readers' emotional attachment to those characters.

One advantage of an explicit thesis statement is that once it is brought to center stage it just has to be left there and not obscured by tangential characters to retain the readers' attention.

The student also uses a technique similar to that which we saw in the article on postwar French fashions. Look at the subjects of the first sentences of the paragraphs devoted to discussing Brontë's contemporaries:

> Brontë's early critics . . .
> The critical reception of *Shirley* [one of Brontë's novels] . . .
> An unnamed reviewer . . .
> *Shirley* received harsher criticism . . .
> The reviewers . . .

The subjects of the sentences focus our attention on the ideas established by the thesis statement.

Critics often begin a section with a question—to make us look ahead toward the answer they will suggest. So the student begins a paragraph with

> Why were Brontë's critics so hard on her books?

and then offers an answer in the opening sentence of the next paragraph:

> The problem with the critics' discussions is that . . .

Students sometimes ask how they can actually practice such subtle techniques and yet avoid being too obvious or repetitious. No rules will guide you absolutely; however, you can, as you begin each new section and each new paragraph, ask yourself, "What does this contribute to my thesis?" Your answer should force you to focus your own ideas, which should in turn help you to say things that will focus your audience's attention.

Exercise 2.3 Maintaining Focus in the Humanities

The essay that follows is a review of an old Simon and Garfunkel album. Reviews are typical of interpretive work in the humanities; they can, however, range over a variety of observations and criticisms and become unfocused. This review was supposed to be carefully and consistently focused. Does the essay maintain the focus established by the thesis statement (the last sentence of the first paragraph)?

Analyze the techniques the review uses to maintain its focus. Are there some strategies that do not work well? If so, why don't they? Recommend changes that you would make to better maintain the focus.

> Recently, thanks to my roommate's obsession with Simon and Garfunkel, I have come to appreciate the famous duo's music. I settled on the *Wednesday Morning, 3 a.m.* album for my review because it is a very early collection of Simon and Garfunkel songs and it anticipates the formula that made Simon and Garfunkel successful. The album's strength is in its pairing of serious social issues and soothing, harmonic music. 1
>
> The more deeply I fell into the silky harmonies, the more I was able to focus on the messages—political, biblical, and social—condemning war, loss of value, and the chaos of modern society. The protest of this new folk sound found a clear place in the anti-war movement of the 1960s. As I concentrated on the messages, I heard the voices of two dissatisfied young men who wanted change.
>
> The sought-after change came through most clearly in their cover of Bob Dylan's "The Times They Are a-Changin'." It voices the themes

> of the entire album—become aware, understand, and help. The pain involved in making change is explored, and the anti-war protest comes through clearly.
>
> Anti-war protest gives way to a vision of world peace in the song "Last Night I Had the Strangest Dream." Although built on an unattainable ideal, this was one of my favorite songs. It has a pleasant sound, excellent harmony, and a profound political statement.
>
> 5 Although I am largely impressed by the album, a few of the songs were confusing. "The Sun Is Burning" may have had a meaning deeper than what was at the surface, but I could not find it. And "Peggy-O" was downright strange. It began with a loving attitude but ended in destruction.
>
> To sum up, I interpreted this album as a set of poems; I could easily imagine others interpreting the works differently, but we would all agree on their beauty. This, in essence, is the greatness of Simon and Garfunkel.

WORKSHOP 1

Focus in the Humanities

The essay that we will use for all the humanities workshops (Workshops 1, 6, 10, and 14) was written for a Shakespeare class. Colleen, the author, was a junior communications major with an English minor. After explaining the assignment, we will look at Colleen's concerns and questions; then you can see the final draft of her paper. Finally, there are some questions for you to tackle.

THE ASSIGNMENT

Colleen's teacher gave no written assignment. In class the teacher explained that she wanted students to interpret a character, scene, or cluster of scenes from *Hamlet*. She suggested that students first select a topic that caught their interest, then study it until they felt they could draw a conclusion about it and offer a thesis to focus the paper. She also helped them to define a topic by talking with them after they had finished their first draft.

COLLEEN'S QUESTIONS ABOUT FOCUS

Colleen's comments show the gradual process that a writer often goes through to find a focus.

> The focus changed a few times. Originally, I wanted to compare

Quarto 1 and Quarto 2. So the whole paper was centered on the ongoing debate about which was the better version of the play, Quarto 1 or Quarto 2. I started studying by putting together all the differences between the two quartos, but doing that got me looking closely at just one scene—with the queen. Then I focused on the queen [Gertrude] as an example of the Quarto 1 and Quarto 2 discrepancies. But when I started looking closely at the queen, I realized that her character was more interesting to me than the debate about the quartos.

Finally, after writing most of the first draft, I decided to make the queen the focus of my paper and used the quartos together to show how she can be more fully understood. So I went from using the queen's scenes as examples of how one quarto was better than the other to using differences and similarities between the quartos as evidence to support my interpretation of the queen's character. I kept thinking, "What's more interesting to me?" I thought what I settled on was interesting and rare, so I had to go with it.

I showed the next draft to my teacher, and she suggested that I bring the paper back to the thesis at the end; she thought I had left the end too broad. I think the new focus is clear, but because it sometimes got blurred with the original focus, I worry a little that my readers won't see what I see as the real point.

COLLEEN'S PAPER

"It is Enough, Mother Good Night": The Queen of Two Texts

Essentially, the plot of Shakespeare's *Hamlet* centers on the family trio of Claudius, Gertrude, and Hamlet. At the very crux of this trio is Queen Gertrude, who forms the delicate bridge between the protagonist and the villain, loving one as a concerned mother and the other as a doting wife. The resulting tension puts Gertrude at the fulcrum of a balance, as she cannot fully direct her love toward both men at the same time. Shakespeare places Gertrude in this situation through his master plot, but allows her no opportunity to reveal to the audience her deepest feelings regarding the matter. The queen has no soliloquies, and even in her long scenes of dialogue, such as the closet scene in Act III, she does little of the talking. As a result, Gertrude is a tag-sale puzzle, missing so many pieces that only the bare bones of her character are left as clues to her whole person. 1

This is especially a problem with respect to today's more prominent editions of *Hamlet,* which stem from a combination of the Second Quarto (hereafter: Q2) and First Folio texts of this work. Most scholars believe these texts to be closest to Shakespeare's original work, despite the fact that they bear publication dates later than that of the first published text, the First Quarto (Q1) of 1603. Presumably some "reporter" of the original production of the play (an actor or audience member with an extraordinary memory) drafted Q1, which accounts for its abbreviated dialogues and shortened soliloquies. Generally ignored by scholars as the "bad quarto" due to this questionable authorship, Q1 with its "altered" verse nevertheless provides many additional clues regarding the queen's inner tension, augmenting Q2 by adding pieces to the Gertrude puzzle. When both texts are read *together,* the balance tips toward Gertrude's love for Hamlet, and she is portrayed as a mother first, a wife second.

Although the tension in Gertrude's position is set up by her marriage to Hamlet's uncle, it is not integral to the plot until the "Mousetrap" scene, when Hamlet confirms his suspicions of Claudius's villainy. Ensuing is the vital closet scene, when Hamlet must confront his mother with the horrid truth. At this point, he is the only character in the play (save the ghost) who recognizes that Gertrude is at the center of the conflict, and he must convince her of the king's treason. After Hamlet confides in his mother and begs her assistance, Gertrude also recognizes this tension when she cries, "O Hamlet, thou hast cleft my heart in twain" (Q2.III.iv.156). This line marks the plot climax for Gertrude, as it causes her to face her battling loyalties. Her heart is split into two halves—one half for Claudius and one for Hamlet.

This recognition being key, the placement of this line gives insight into the queen's character. In the Q2 text, the line appears after the ghost's closet visit. By this point Gertrude has her most unarguable proof yet that Hamlet is going mad: his report of the vision. Her line comes directly after Hamlet's plea that she believe in him: "It is not madness / That I have uttered; bring me to the test" (III.iv.141–42). In this case, the queen's motivation for tending a cleft heart stems from her uncertainty of Hamlet's sanity. One half of her yearns to believe in her son, while the other half cannot overlook the strong evidence of his madness. Her mind questions *Hamlet* instead of his uncle, despite the high stakes surrounding the confusion.

In Q1, Gertrude delivers this powerful line much earlier, before the 5
ghost arrives. It follows on the heels of Hamlet's initial attack on her incestuous relationship:

> Why appetite with you is in the waine,
> Your blood runs backward now from whence it came,
> Who'le chide hot blood within a Virgin's heart,
> When lust shall dwell within a matron's breast? (III.iv.55–58)

Here, when the queen laments a cleft heart, it is in response to a personal attack, and instead of Hamlet's madness, her focus is on her own alleged treason. Now her heart is split because she knows she is sleeping with her son's enemy (Hamlet has already reported Claudius's bloody deed). In this text, the queen faces her dilemma at a time when she is better able to believe her son and view the events from his standpoint.

Not only is she better equipped to support Hamlet in his attack on Claudius, she is also better prepared for the ghost's visit. When her heart is broken *earlier* in the scene, Hamlet has more time to pick up the pieces himself and draw her to his side, and in Q1 he wastes no time in this attempt.

In both texts, Hamlet's response to Gertrude's climactic line is a plea for her devotion: "O throw away the worser part of it, and keep the better" (Q1.III.iv.60). In Q1, Gertrude sees that he is following up on his recent accusations by asking her to throw away her treasonous love for Claudius. Here, the remainder of the scene is set up: he shall strive to make her see the king's betrayal. In Q2, much of the action in the scene has already transpired, and Hamlet's line is understood by Gertrude as a last-minute plea of sanity. The Q1 queen is encouraged to stand by her son; the Q2 queen is asked to put her better judgment on hold. The former is the easier request.

This is reflected in the aftermath of the spectral visit. The queen in Q2 (who has not yet spoken of a cleft heart) responds to Hamlet's encounter in her doubtful summary, "This is the very coinage of your brain, / This bodiless creation ecstasy / Is very cunning in" (III.iv.137–39). In Q1 she also doubts the reality of her son's vision but nevertheless attributes it to Hamlet's emotional state, while adding two lines to address the issue of Claudius's treason:

> Alas it is the weakness of thy brain,
> Which makes thy tongue to blazon thy heart's grief:
> But as I have a soul, I swear by heaven,
> I never knew of this horrid murder:
> But Hamlet, this is only fantasy,
> And for my love forget these idle fits. (III.iv.91–96)

The key clue in this passage is that Gertrude is thinking about the murder. In Q2 she merely tries to shush her son; here she cannot bear for him to go on because his words hurt her. Her confession that "I never knew" indicates that she is taking Hamlet's words seriously. Thus, in Q2 she *believes* that they are idle fits; here she *prays* that they be fantasy.

The Q1 Gertrude's loyalty to her son is further demonstrated at the conclusion of the scene, when Hamlet finally makes a direct request of her in his plot against the king. In Q2 he asks her to stay out of the king's bed and to act as though she had not spoken with Hamlet, continuing to plead her son's sanity to the king. Says Hamlet, "Make you to ravel all this matter out, / That I essentially am not in madness" (III.iv.186–87). The queen, no doubt relieved at the prospect of forgetting about the entire closet scene, complies: "Be thou assured . . . I have no life to breath / What thou hast said to me" (III.iv.197–99). Thus the scene is concluded and the queen's focus is still on the uncertainty of Hamlet's madness.

In Q1, Hamlet reveals that he believes he can trust his mother (and she him) when he forms his request, and he is confirmed in that assumption when she replies in utter loyalty:

HAMLET: And mother, but assist me in revenge,
And in his death your infamy shall die.

QUEEN: Hamlet, I vow by that majesty,
That knows our thoughts, and looks into our hearts,
I will conceal, consent, and do my best,
What stratagem soe're thou shalt devise. (III.iv.103–08)

Now all the cards are on the table. Gertrude knows that her son means to kill the king, and his promise that her assistance in this murder will wipe away the "infamy" of her love for Claudius speaks to her. In her response she makes the choice to follow the side of her heart that loves her son (a decision which the Q2 Gertrude never clearly makes in either direction).

In his farewell line, "It is enough, mother good night" (III.iv.109), the Q1 Hamlet concludes the closet scene with a peaceful air which is missing from the Q2 scene, where it remains unclear if his pleading reached through to his mother. He knows that he can trust her, and she will prove him correct. This entire scene in Q1 provides a much better preparation for the king's subsequent discovery of the dead Polonius. Ready to stand by her son, the Q1 queen may without hesitation clear his name by telling the account of the "mistaken rat." Although this defense of Hamlet occurs in both texts, the Q2 account provides much less explanation of her inner motivation, and the scene has less impact; alternatively, the context of the Q1 account highlights this scene as proof of the queen's sincerity in her chamber encounter with her son.

In the remaining plot, the Q1 text contains one more blatant distinction from the Q2—a distinction which continues to focus on the triumph of Gertrude's motherly love. True to its pattern of abbreviated dialogue, Q1 contains a scene in Act IV between Horatio and Gertrude wherein he informs her of the letter-switching in the ship bound for England. This scene has a purpose far greater than merely contributing to the overall terseness of the Q1 plot structure; it is proof that the queen is fully aware of Claudius's plot against Hamlet. This, combined with her knowledge of Claudius's prior murder of her husband, leads Gertrude to officially denounce her love for Claudius:

GERTRUDE: *(speaking of Claudius)*
Then I perceive there's a treason in his looks
That seemed to sugar o're his villainy:
But I will soothe and please him for a time,
For murderous minds are always jealous.
(IV.v.128–31)

Now it is clear that the side of Gertrude's heart which passionately loved her husband is not merely overshadowed by her love for Hamlet, but actually trampled on and cast aside. She has been betrayed, and she knows that the game can be played by both parties. Her vow to "soothe and please him for a time" clues the audience in to the fact that she intends to maintain the appearances of devotion to the king in order to avoid suspicion his "murderous mind" may develop. The jealousy she speaks of refers to her devotion to Hamlet; she is wise enough to realize that the king wants to pull her away from her son as much as Hamlet wanted to pull her away from her husband. But now there is no chance of that: her internal betrayal of Claudius is the final mark of her undying loyalty to her son.

As none of this occurs in the Q2 text, the conclusive moment of the queen's life takes on an entirely different meaning when the texts are read together. A Gertrude who knows of her husband's villainy and plot against her son is cautiously suspicious of Claudius's every move. During the duel, when the king sets a cup of wine out for Hamlet, the queen limited to Q2 innocently suspects nothing of her loving husband and takes the cup mistakenly and tragically; however, the two-text queen has a motive for taking the goblet. She loves her son faithfully, betrays her husband loathingly, and uses her last deed to keep her bedchamber vow, by raising her goblet to toast:

> Here Hamlet, thy mother drinks to thee. (v.ii.75)

Questions for You

To begin, answer two of the main questions of Part 1: How does this paper (1) establish and (2) maintain its focus? Colleen says she found a thesis that she liked; what is it, and where exactly is it found? Point out three specific devices used to maintain focus.

Are there any places at which the focus seems to blur at all? If so, what are they, and how would you revise them to sharpen the focus?

Study the first and second paragraphs. Does Colleen's original idea for the focus (see "Colleen's Questions about Focus") ever creep in and blur the new thesis?

Does the final paragraph bring the thesis back into focus (as Colleen's teacher said it needed to)? Does the title of the paper sharpen or blur the focus? Explain your answers with specifics.

Having read all the materials in this workshop, are there any questions you have about focusing in the humanities? If you had written Colleen's paper, would you have any questions to add to her list? If so, what would they be?

NATURAL SCIENCES

Natural scientists do not write thesis statements; they write *hypo*theses. Let me explain the difference with some word history. *Thesis* comes from a Greek word that means to set or put; one of its ancestors meant "a thing laid down or done," as in a law or deed. So we could say that *thesis* signifies something important that is set down—laid down before a reader. *Hypo* is a root that means under or beneath. A hypodermic needle, for example, goes under (hypo) the skin (dermis). A hypothesis, then, is that which undergirds the thesis; it is the supposition underlying the thesis—a kind of tentative thesis. And the Greek word from which we get *hypothesis* means a proposal or supposition.

In other words, we could say that scientists are in the business of supposing. "Suppose that atoms are bound together in this way. What would happen then? What experiments could we conduct to see if this hypothesis is true?"

Natural science is fundamentally experimental; it asks questions about nature, supposes explanations, and carries out experiments to test its suppositions. So natural scientists choose topics about which they can suppose factual explanations—atomic bonds rather than poems. And they express the topics they focus on, appropriately, in terms of hypotheses rather than theses. Once again, the writer's choices are determined by the writer's purpose.

Deciding on the Point

Practical Constraints on Topic Choice Not many years ago, this section would have seemed unnecessary for students in the natural sciences; they did not make many decisions about what to focus on in their lab reports because those decisions were made for them. Writing a lab report was largely a matter of carefully following a step-by-step procedure and then filling in the blanks for the report.

But things are changing. Many science departments have designed programs in which students devise their own experimental plans. This change forms part of a general trend toward making classroom experience anticipate professional experience. But even if your topics are chosen for you, you will need to think about your teacher's reasons for choosing them.

How, then, do scientists decide what to research and write about? Compared to the humanities, the sciences place more complicated constraints on topic choices. An art historian or a literary critic certainly has to know what kinds of topics are expected and considered worthwhile by his or her audiences at any point in time, but the choices open up broadly after that. It is not uncommon, for example, for an English teacher to publish on several different writers and historical periods.

Natural scientists also need to know the traditionally valid topics, the expected and necessary questions to ask (we will talk about these in a minute), but they have other, practical, reasons for selecting topics to study and write about at any particular time. Scientific research generally costs a great deal more than research in the humanities—scientists need sophisticated machines and materials and money to purchase test subjects. Consequently, scientists rely on funding from agencies like the National Science Foundation (one of the important tasks for scientists is the writing of grant applications, asking for funding), and the priorities of agencies change over time—sometimes favoring certain subject areas (the physics of semiconductors or genetic engineering) or certain approaches (studies with practical benefits rather than those that seem to propose knowledge for its own sake).

Natural scientists are also especially directed by the contexts of their own past research or the goals of their research team. Often a scientist or team of scientists will have long-range goals that they accomplish through a series of studies conducted over years or even decades. A lab group that I was part of was trying to develop a new birth control method. The research team published one or two articles every year for five or six years (long after I had left the lab and lost track of the project), and each new article made extensive reference to our previous articles. If you look through the introductions of scientific articles, you will see evidence of this practice in the form of authors' references to their own earlier publications. You can see that scientists' choices of research topics are heavily influenced by their previous choices.

If you take on an independent research project as a student, you too may face the practical constraints on topic choices. You may be limited by the kinds of research that your teachers are conducting or the facilities of your school. For an independent study I did as a senior biology major, I studied the influence of light-dark cycles on activity patterns of crayfish. Why? Because the only room available for me to use contained a tank and a new machine that my professor wanted me to try out, so crayfish occupied my life for three months.

Traditional Topics in the Natural Sciences Given the need to work with such constraints, let us now consider the traditional issues that scientists study. Generally, scientists focus their attention on four types of issues, four questions:

1. **Classifying** What are the types, or classes, of things in nature?
2. **Explaining composition and behavior** What are the things in nature made up of, and how does their makeup affect their behavior?
3. **Discovering origins** How did the things in nature come to be made up as they are?
4. **Understanding function** How do the things in nature function? (Toulmin, Rieke, and Janik 315)

Scientists thus share some of the issues that business writers focus on, such as understanding how things work, but they do not usually write about paradox and ambiguity and other such topics common to people who write in the humanities.

Another way of comparing the natural sciences and the humanities is to look at the language they use to praise or criticize their colleagues' writing. Tony Becher, a linguist, analyzed the comments of reviewers, the people who read and evaluate articles and books submitted for publication. He discovered that historians praise each other's work with words like "scholarly," "original," and "masterful"; but scientists never use these words for commending their colleagues' writing. Science moves too quickly for the kind of reflective "scholarly" work that might occupy a critic for years, and the quality of being original is a given—a scientific article must be original. A good scientific article is "elegant" and "productive." We see again in this language the humanities' preferred focus on that which enriches our understanding of complexity and ambiguity and the natural sciences' preference for concise, "elegant" discussions that focus on the facts of nature and produce opportunities for further research.

Focus in a Report of Scientific Research After choosing a topic to study and conducting their experiments, a team of scientists then has to report their findings in a journal article. They must bring their findings, which they hope the scientific community will accept as facts, to the foreground, focusing on the significant results of their experiments. But it is not always easy to remember to do that. Sometimes scientists can give too much attention to the implications of their findings. Traditionally, scientists talk about implications only in the Discussion section of their journal article and even then use modest tones to indicate what their research could generate. At other times, scientists may become too enamored of their experimental methods and let that emphasis take center stage in more than just the Materials and Methods section.

The preceding paragraph reminds us that the traditional organization of scientific articles into Abstract, Introduction, Materials and Methods, Results, and Discussion gives science writers a clear guide to what they should focus on in each section. (This organizational structure is known as an IMRAD plan, and you will probably use it when writing lab reports and poster projects, two kinds of assignments often given to science students.) But scientists always focus on the findings, the facts, the "things" in nature that they have discovered or discovered something about. To do this, they may even announce their findings at the end of the Abstract, again at the end of the Introduction, still again in the Results, and one last time in the Discussion, where they indicate what the results could mean to the future of their science.

Focus in Review Essays So far I have been talking only about research articles. Another primary type of article published by scientists is called a **review** essay, and in these essays scientists choose their focus differently than they do in regular research articles. In review articles, scientists do not report new research but write about previously published work; in one article a scientist may refer to and summarize the highlights of over a hundred published research articles. Scientists cannot focus the whole article on new findings, nor do they follow a given format that determines the focus of individual sections. Review articles are a little like writing in the humanities in that they interpret previous work, often summarizing years of work on a subject. They are also a little like business writing in that they usually end, even if implicitly, with a call for action, suggesting the direction in which their authors think research should proceed.

One study found that review articles could focus either on a new story of the *things* in nature or on a story of the *researchers* studying nature (Myers's "Stories and Styles"). In the first type, a writer could use information gathered from previously published research and tell a new version of how, for instance, a species evolved. This first type might involve a process something like a historian undertakes when he or she reads many versions or isolated parts of a history of the Civil War and then retells the story with a focus on what the historian considers to be the important issues. For the second type of review essay, a scientist might write a history of the research done on a certain subject in order to refocus the audience's attention on what is important about the subject.

Other ways of focusing review articles are possible. Consider Daniel Janzen's "How to Be a Fig." At the end of the introduction, Janzen announces his purpose (in a sentence that takes a form similar to the statements of intention that we saw in writing in the humanities):

> This review is an effort to locate manageable questions, rather than to summarize an extensive body of information. (15)

Even scientists find review articles difficult to write or to focus because of both the depth and breadth of information they must survey and the variety of the published models. Some science teachers do assign review articles to students, and if you find yourself having to write one, you should, in addition to getting explicit instructions from your teacher, read as many reviews as you can in order to develop an idea of your options for writing a review.

Exercise 2.4 Choosing Topics in the Natural Sciences

Go to your library and select three different scientific journals—in fields that interest you. Look at one recent issue (published within the past three years) from each of the journals and read the Abstracts of all the articles.

Next read the Introductions to each of the articles. Study the authors' attempts to establish grounds for the topics they have written about; also look at the citations (the parenthetical references to the background research). Comment on the differences between the way topics are made to seem worthwhile in the sciences and the way topics are made to seem worthwhile in the humanities.

Establishing the Focus

Titles Titles in scientific articles must be extremely precise (and we will talk more about this precision in Chapter 5). An exact title helps to establish a focus for a scientific article. A recent volume of a biochemistry journal titled *Endocrinology* includes some titles that state the topic:

> Divergence of Signaling Pathways for Insulin in PC-12 Pheochromocytoma Cells
>
> Thyromimetic Effects of T_3 Sulfate in Hypothyroid Rats

Some titles in the same journal even include the conclusion, the point that the research proves:

> Tumor Necrosis Factor-α Antagonizes FSH Action in Cultured Sertoli Cells
>
> The Thyroid Hormone Receptor Can Unmask a Glucose Response in the S14 Gene

When scientists read a title either in a table of contents of a journal or in a bibliography, they should immediately recognize the focus of the study and thus know if it is of importance to them.

Abstracts In regular research articles and in some review articles, scientists also use an Abstract to establish a focus. One type of Abstract, called "informative," is used for research articles; typically, it summarizes each of the main sections—indicating the purpose of the study, describing the methods, summarizing results, and announcing principal conclusions. Many publications give guidelines for writing Abstracts. *Endocrinology* tells potential authors that the Abstract "should not exceed 200 words" and that it "should briefly describe . . . the purpose of the investigation, the methods utilized, the results obtained and the authors' principal conclusions." The *Journal of Medicinal Chemistry* says that all articles must include an Abstract: "100–150 words should be adequate," and the Abstract "should be presented in a findings-oriented format in which the most important results and conclusions are summarized." According to the Council of Biology Editors,

> An abstract can not only state a conclusion, but also indicate the motive for the research, the study design, the experimental methods and materials used, and the main findings. Thus, writing an abstract will force you to summarize very concisely the article's projected main sections. (4; this quotation is taken from an older edition of the CBE manual because the latest edition has dropped all advice on writing the parts of scientific papers)

You see, then, how important it is not only to take advantage of opportunities for establishing focus in the Abstract but also to realize that because scientists rely on Abstracts to tell them the *point* of an article, a poorly articulated Abstract will be both confusing and irritating.

When you read Abstracts, you realize that these guidelines can be interpreted and followed in a variety of ways (in a 1993 volume of *Journal of Physics: Condensed Matter*, the Abstracts ranged from 36 to almost 300 words), but generally all Abstracts summarize the main sections of the paper. Here are the beginnings of two Abstracts from the 1993 volume of *Endocrinology*:

> Expression of the protooncogene c-*jun* is induced . . .

> A marked increase in food intake is observed . . .

Each Abstract begins with already established facts in the field, thus summarizing the main information of the Introduction; each then goes on to state methods, results, and conclusions, corresponding to the Materials and Methods, Results, and Discussion sections of the articles. The purpose of each study is implied in the beginning of the Abstract; rather than say, "Our purpose was to study . . . ," the authors simply explain what they studied and what they discovered.

If an Abstract is given for a review article, it is usually what is called an indicative, or descriptive, Abstract. These Abstracts describe an article in enough detail for a reader to decide whether or not to read it, but they do not summarize the content of each main section. Here is an example of an Abstract from an issue of *Science:*

> Motor vehicle emissions have been and are being controlled in an effort to abate urban air pollution. This article addresses the question: Will the vehicle exhaust emission control and fuel requirements in the 1990 Clean Air Act Amendments and the California Air Resources Board regulations on vehicles and fuels have a significant impact? The effective control of in-use vehicle emissions is the key to the solution to the motor vehicle part of the urban air pollution problem for the next decade or so. It is not necessary, except perhaps in Southern California, to implement extremely low new car emission standards before the end of the 20th century. Some of the proposed gasoline volatility and composition changes in reformulated gasoline will produce significant reductions in vehicle emissions (for example, reduced vapor pressure, sulfur, and light olefin and improved high end volatility), whereas others (such as substantial oxygenate addition and aromatics reduction) will not. (Calvert et al. 37)

This Abstract focuses our attention on the question, Will the new regulations make an important difference? and on the answer: Some will and some will not.

Introductions Introductions focus an audience's attention by moving from discussion of, as *Endocrinology* puts it, "the state of knowledge of the subject under investigation" to a "succinct statement of the problem" being studied. Often they also contain a rationale, a reason that the study is worth conducting—something like "The topic of this investigation has been extensively researched recently," or "The findings herein presented hold promise for. . . ."

Exercise 2.5 Establishing Focus in the Natural Sciences

Study these three pairs of titles and abstracts from scientific journals. Write down two or three techniques used in each title and abstract to establish the focus. Select the abstract that you think establishes focus most effectively, and explain why you think it is especially good.

> ***Ultraviolet Photoreception Contributes to Prey Search Behavior in Two Species of Zooplanktivorous Fishes***
>
> *Abstract.*—We tested the hypothesis that ultraviolet photoreception contributes to prey search in small juvenile rainbow trout (*Oncorhynchus*

mykiss) and pumpkinseed sunfish (*Lepomis gibbosus*) while foraging on *Daphnia pulex.* Small individuals of these species are ultraviolet-photosensitive zooplanktivores. For both species, prey pursuit distances and angles were larger under full-spectrum illumination than under ultraviolet-absent illumination. The same was true for the distances and angles associated with repositioning movements (i.e., those not leading to the location of a prey item). Thus, ultraviolet photoreception contributes to prey search and detection in these fishes. We argue that the most likely mechanism underlying this enhancement of prey search abilities is improved target contrast. (Browman, Novales-Flamarique, and Hawryshyn 187)

Effects on Fitness Components of Enhanced Expression of Elongation Factor EF-1α in **Drosophila Melanogaster.** *I. The Contrasting Approaches of Molecular and Population Biologists*

Abstract.—We measured the life spans and fecundities of mated female fruit flies that had enhanced expression at higher temperatures of the gene for elongation factor 1*α* (EF-1*α*), a gene of known physiological function, and compared those measurements made on control lines at 25° and 29.5° C. We also measured similar effects on the life spans of virgin males and females. The hypothesis that enhanced expression of EF-1*α* at 29.5°C increases life span was tested by the significance of the treatment-by-temperature interaction effect in factorial ANOVAs and Cox regressions. This effect was significant for mated females only. Treatment females with enhanced expression of EF-1*α* lived significantly longer and laid significantly fewer eggs early in life than did control females, a result not mediated by possible effects of EF-1*α* on body weight. There was an effect of treatment independent of the interaction with temperature. Virgin treatment females lived significantly longer at both 25° and 29.5°C. In contrast to previous results, enhanced expression of EF-1*α* had no impact on the life spans of virgin males. Implications are discussed for the evolutionary theory of aging and for biases introduced into experimental design through the influence of particular theories. (Stearns, Kaiser, and Hilleshiem 961)

Pattern in the Root Epidermis: An Interplay of Diffusable Signals and Cellular Geometry

Abstract.—The epidermis of roots is composed of hair and non-hair cells. Patterning of this epidermis results from spatially regulated differentiation of these cell types. Root epidermal development in vascular plants may be divided into three broad groups based on the mode of hair development: Type 1: any cell in the epidermis can form a root hair; Type 2: the smaller product of an asymmetric cell division forms a root

> hair; Type 3: the epidermis is organized into discrete files of hair and non-hair cells. The *Arabidopsis* root epidermis is composed of discrete files of hair and non-hair cells (Type 3). Genetic and physiological evidence indicates that ethylene is a positive indicator of hair cell development. Genes with opposite roles in the development of hair cells in the shoot (trichomes) and hair cells in the root have been identified. Plants with presumptive loss of function alleles in the *TRANSPARENT TESTA GLABRA (TTG)* or *GLABRA2 (GL2)* genes are devoid of trichomes indicating that these genes are positive regulators of trichome development. The development of supernumerary root hair cells in these mutant backgrounds illustrates that these genes are also negative regulators of root hair cell development. A model that explains the spatial pattern of epidermal cell differentiation implicates ethylene or its precursor 1-amino-1-cyclopropane carboxylate as a diffusable signal. Possible roles for the TTG and GL2 genes in relation to the ethylene signal are discussed. (Dolan 547)

Maintaining the Focus

Materials and Methods Section and Results Section The format of scientific articles makes it fairly easy to keep a reader's attention focused on the discoveries reported. In the Materials and Methods section and the Results section, scientists need

- to convince their audience that they followed approved and thorough procedures,
- to describe the methods clearly enough that others can duplicate their work, and
- to present the pertinent information collected from their experiments.

If, as part of a larger study, you conduct experiments and gather results that do not pertain to the conclusions you are focusing on, you should not include those methods and results. Do not, however, exclude results that make your conclusions questionable (some scientists who have done that have ruined their careers); such results are pertinent.

Discussion Section The primary functions of this section are to interpret findings (in order to draw conclusions about classes, composition, behaviors, origins, or functions of things in nature) and to propose the significance of your findings (to explain how they help us to understand nature differently than we did before and how they can be followed by further research). Be careful in this section; if you fail to keep the interpretation focused on the relevant findings or stretch the implications for further research beyond what follows directly and clearly from the findings, your audience's attention may drift.

Review Essays Review essays are more difficult to keep focused than regular research articles. Because they cover a broad collection of information and follow no given format, they can become loose and unfocused and fail to offer readers clearly foregrounded ideas. If you are assigned a review article, you may want to do what some publishers of review articles demand: submit to your teacher a detailed outline and a short statement of your purpose. This should help you to keep focused. You can then use some of the techniques from business writing (visually highlighted headings) and humanities writing (reiterations of key ideas and careful transitions) to maintain focus.

Exercise 2.6 Maintaining Focus in the Natural Sciences

Analyze the techniques that this student research report uses to maintain its focus. Point out specific examples of the techniques you see at work here. Are there some strategies that do not work well? If so, why don't they? Recommend changes that you would make to better maintain the focus.

Evaluation of the Antimicrobial Potency of Several Household Disinfectants Using a Modified Phenol-Coefficient

ABSTRACT

1 To compare antimicrobial potency of several brand-name disinfectants, dilutions of Lysol Disinfectant, Pine-Sol Cleaner, Clorox Clean-Up, and The Works Glass and Surface Cleaner were inoculated with stationary-phase *Staphylococcus aureus* culture. Inoculated solutions were tested for antimicrobial activity by plating samples onto L agar and determining presence of or inhibition of growth after 24 h of incubation at 37° C. Lysol-coefficients were calculated to be 0.0888 and 0.0536 for Pine-Sol and Clorox, respectively. The Works showed no antimicrobial activity at any concentration.

INTRODUCTION

The elimination of microorganisms from inanimate surfaces is vital in preventing the occurrence and spread of disease (1). Disinfectants with a variety of active ingredients are readily available to the average consumer. However, not all commercially obtainable disinfectants produce the same bacterial effect. In order to determine the effectiveness of antimicrobial agents, several laboratory techniques can be utilized, with

Staphylococcus aureus often being the microorganism of choice (2). For disinfectants that are water-soluble liquids, microbiologists generally employ the Food and Drug Administration (FDA) phenol-coefficient method (2), in which the killing power of the disinfectant is compared to that of phenol. A modification of the FDA method, using Lysol (5.5% phenol) as the standard instead of concentrated phenol, was the method used in this study to determine antimicrobial potency.

MATERIALS AND METHODS

Inoculum Preparation

A freeze-dried culture of *Staphylococcus aureus* (ATCC) was obtained and was rehydrated at 37°C in 4 mL of L broth (3). A transfer loop sample was plated onto L agar and incubated overnight at 37°C to determine purity and viability. The culture was reestablished from a single colony into 12 mL of L broth and was incubated in a 37°C shaker water bath for 24 hours to obtain stationary-phase growth.

Preparation of Dilutions

Using deionized water, one-tenth serial dilutions (10^0 to 10^{-4}) were made of Lysol Disinfectant (5.5% phenol), Pine-Sol Cleaner (19.9% pine oil), Clorox Clean-Up (2% sodium hypochlorite), and The Works Glass and Surface Cleaner (isopropanol). Based on preliminary tests, additional dilutions were prepared to obtain 0.02, 0.04, 0.06., 0.08% Lysol samples; 0.2, 0.4, 0.6, 0.8% Pine-Sol samples; and 2, 4, 6, 8% Clorox samples. A 5-mL sample of each dilution was placed in a 10-mL screw-cap test tube and was incubated at 25°C.

Inoculation and Calculation of Lysol-Coefficient

5 Each 5-mL dilution sample was inoculated with 0.5 mL of stationary-phase *S. aureus* culture. After 5 minutes, 10 minutes, and 15 minutes of incubation at 25°C, samples were taken from each tube using a transfer loop and were plated onto L agar. The plates were incubated at 37°C for 24 hours and subsequently examined for growth. A modified phenol-coefficient (2) was calculated using Lysol as the standard. Effective dilutions of each disinfectant being tested were calculated using the following equation:

$$\frac{\begin{array}{c}\text{Dilution killing}\\ \text{bacteria at 5,}\\ \text{10, and 15 min}\end{array} + \begin{array}{c}\text{Dilution unable}\\ \text{to kill bacteria at}\\ \text{any length of time}\end{array}}{2} = \begin{array}{c}\text{Effective}\\ \text{dilution of}\\ \text{disinfectant}\end{array}$$

To determine the Lysol-coefficient, the effective dilution of each disinfectant was then divided by the effective dilution of Lysol.

RESULTS

Examination of the L agar plates streaked with Lysol dilutions showed that at concentrations of 0.1% Lysol (5.5×10^{-3}% phenol) and higher, no microbial growth was evident; whereas at 0.08% Lysol (4.4×10^{-3}% phenol), there was growth after 5 minutes of inoculation with *S. aureus*, but not after 10 minutes and 15 minutes. At concentrations of 0.06% Lysol (3.3×10^{-3}% phenol), growth was evident after 5 minutes and 10 minutes of incubation, but not after 15 minutes. At all lower concentrations, growth occurred (Table 1).

Pine-Sol, Clorox, and The Works showed varying results for each of the dilution samples. At concentrations of 1% Pine-Sol (1.99% pine oil) and higher, no microbial growth was evident. At 0.8% Pine-Sol (0.19% pine oil) and lower, growth occurred (Table 2).

At concentrations of 2% Clorox (0.04% hypochlorite) and higher, no microbial growth was evident. At concentrations of 1% Clorox (0.02% hypochlorite) and lower, growth occurred (Table 3). At all concentrations of The Works, microbial growth occurred.

Lysol-coefficients were calculated to be 0.0888 for Pine-Sol and 0.0536 for Clorox. Since The Works exhibited no bactericidal effect, no Lysol-coefficient was determined for this substance (see Figure 1).

10 Lysol exhibited bactericidal activity at a maximum dilution of 1:1000, or at a 1:18,000 dilution of its active ingredient, phenol. Pine-Sol exhibited bactericidal activity at a maximum dilution of 1:100, or at a 1:500 dilution of pine oil. Clorox exhibited bactericidal activity at a maximum dilution of 1:25, or at a 1:800 dilution of its active ingredient,

TABLE 1. *Evidence of growth or of inhibition of a stationary-phase* S. aureus *culture in various dilutions of Lysol Disinfectant*

Disinfectant [active ingred.]	*% Disinfectant*	*% Active ingred.*	*Growth 5 min*	*Growth 10 min*	*Growth 15 min*
Lysol [phenol]	100	5.5	–	–	–
	10	0.55	–	–	–
	1	0.055	–	–	–
	0.1	0.0055	–	–	–
	0.08	0.0044	+	–	–
	0.06	0.0033	+	+	–
	0.04	0.0022	+	+	+
	0.02	0.0011	+	+	+
	0.01	0.00055	+	+	+

TABLE 2. *Evidence of growth or of inhibition of a stationary-phase* S. aureus *culture in various dilutions of Pine-Sol Cleaner*

Disinfectant [active ingred.]	*% Disinfectant*	*% Active ingred.*	*Growth 5 min*	*Growth 10 min*	*Growth 15 min*
Pine-Sol [pine oil]	100	19.9	–	–	–
	10	1.99	–	–	–
	1	0.199	–	–	–
	0.8	0.16	+	+	+
	0.6	0.12	+	+	+
	0.4	0.08	+	+	+
	0.2	0.04	+	+	+
	0.1	0.0199	+	+	+
	0.01	0.00199	+	+	+

TABLE 3. *Evidence of growth or of inhibition of a stationary-phase* S. aureus *culture in various dilutions of Clorox Clean-Up*

Disinfectant [active ingred.]	*% Disinfectant*	*% Active ingred.*	*Growth 5 min*	*Growth 10 min*	*Growth 15 min*
Clorox Clean-Up [hypochlorite]	100	2	–	–	–
	10	0.2	–	–	–
	8	0.16	–	–	–
	6	0.12	–	–	–
	4	0.08	–	–	–
	2	0.04	–	–	–
	1	0.02	+	+	+
	0.1	0.002	+	+	+
	0.01	0.0002	+	+	+

hypochlorite. The Works exhibited no bactericidal activity even in this concentrated form.

DISCUSSION

The data suggest that Lysol, with its active ingredient, phenol, is a potent disinfectant, even at very low concentrations. Clorox Clean-Up appears to be an effective antimicrobial agent, although higher concentrations, relative to Lysol, are required. Pine-Sol can also be effective

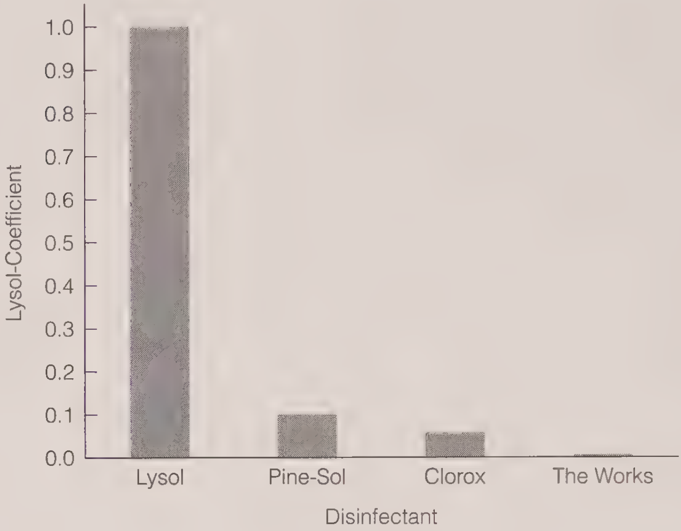


FIGURE 1. *Comparison of bactericidal activity of Lysol, Pine-Sol, Clorox, and The Works as determined by Lysol-coefficients*

at higher concentrations. The Works should not be employed as a disinfectant.

Since inadequate concentrations may not achieve disinfection and excessive concentrations may have a detrimental effect on materials, it is imperative that the appropriate concentration of the antimicrobial agent be used (1). As a safety measure, the makers of Lysol suggest using approximately a 1% solution of the disinfectant, although this study indicates that a 0.1% solution is adequate to kill all microorganisms. Pine-Sol manufacturers suggest using the disinfectant full-strength; however, a 1% solution is sufficient for bactericidal use. Makers of Clorox Clean-Up also suggest a full-strength application, although a 2% solution is adequate, according to this study.

Despite quite conclusive evidence of bactericidal activity in a laboratory setting, similar results cannot be expected in a practical setting (2). A variety of factors can effect the efficacy of the disinfectant. For instance, antimicrobial agents are often deactivated by organic matter, such as blood and sputum (4). Some disinfectants are unstable in solutions, and storage containers for these substances may also have a negative effect on antimicrobial activity (4). Therefore, although the laboratory test can give a somewhat reliable index of a disinfectant's practical value (2), it is highly important to test the efficacy of disinfectants under realistic conditions of use and of storage (4).

(I have deleted the list of references because they do not help us study the question of focus.)

WORKSHOP 2

Focus in the Natural Sciences

The essay that we will use for all the natural sciences workshops (Workshops 2, 5, 11, and 15) was written for a biology class called Investigations in Behavioral Ecology. A report of original research—designed, conducted, and written (in an IMRAD format)—was the main assignment. Clarence, the author, was a senior biology major. After explaining the assignment, we will look at Clarence's questions about focus; then you can see the final draft of his paper. Finally, there are some questions for you to tackle.

THE ASSIGNMENT

At the beginning of the semester, students in the class were given a list of topics that fall within the subdiscipline of the course (physiological ecology in the case of Clarence's paper). Each topic could be investigated using different biological systems, and the professor offered some examples of how a study might be undertaken. Students then chose the topic area and did some general reading and literature searching.

The professor then met with each student to select a particular system (limited by what animals he or she could responsibly keep, equipment available, and the strengths and interests of the student) and to give initial shape to a project proposal. The students then submitted a formal written proposal.

CLARENCE'S QUESTIONS ABOUT FOCUS

The questions about focus that Clarence recorded in his journal range from relatively specific (see the second question in the following list) to very large, general concerns such as the validity and worthiness of his study.

- How can I title this?
- Can I say "species comparison" even though that was not the pool of the study?
- Is the 1st paragraph of the intro the place to convince the reader of the relevance of such acclimation in the world in general?
- Do I even need to try to convince my audience of the usefulness of my study?
- How in the world is it possible to write an abstract without giving some data but still summing results?
- Is the overcompensation conclusion fair? Is there really any compensation at all?

- In referring to Abrahamson, can I talk about the importance of evolutionary effect and leave out the physiological importance and effects of acclimation?
- Isn't this issue always important? Regardless of "scale" or "as soon as"? How do I portray such but still get in the concept of the impacts on ecosystems, the evolutionary impact?
- If my conclusion (already stated in the abstract) says overcompensation, can the section here be said to go to acclimation temperature?
- How much speculation/prediction is permissible in the Discussion? Is it acceptable to predict how results might have differed? Should this rather just be left as a new unanswered question? Shouldn't I have more questions than answers?
- Is the granting of the bugs' temperature sensitivity an effective way to end the paper? Does this adequately tie up all the loose ends and give positively supported "facts" or enter a whole new scenario which is actually my largest assumption?

CLARENCE'S PAPER

Thermal Acclimation Pressures in Pillbugs

ABSTRACT

The present study investigates the pressures for temperature habitat 1
selection defined by culture temperature as a function of time. Three sets of cultures of pillbugs (*Armadillidium vulgare*) were set up, one in a refrigerator, one at room temperature, and one in an incubator, at about 9, 23, and 29 degrees Celsius respectively. On 3-day intervals a test group of 10 subjects from each culture temperature were placed in the center of an open field arena with a temperature gradient.

Since the animals within the arena would venture as far as physically possible to the cold end but not toward the hot end of the gradient, an upper temperature limit was recorded for each group. This was found to be a very specific characteristic place for each group studied, but was only useful in showing an increasing or decreasing tolerance to respective warmer temperatures (Edney 1964). Exact temperatures were measured at the location of each animal in the arena after 30 minutes of observation. The means of the final location temperatures of each test group from each culture temperature were compared, analyzing the variance to evaluate the significance of the differences between means. This was useful in showing a trend of an overcompensation of the animals opposite to the temperature at which they were cultured.

INTRODUCTION

Thermal acclimation is the process by which any given organism adjusts to the current applicable temperature conditions. This becomes an important biological issue in terms of ecosystems because environmental temperature change might drastically reduce, or completely eliminate, an organism's habitat due to the degree to which the organism can acclimate respective to the thermal change (Abrahamson 1989). Cossins (1987) has commented that "with regard to life on earth, temperature is, next to light, the most potent environmental component." He goes on to explain how temperature effects change in organisms in two specific ways. First, physiological effects can be noted. Secondly, in line with the focus of this work, are evolutionary effects. This is directly tied to the effect on an animal of specific temperatures or changes in temperature over a given length of time.

Literature has been published emphasizing how an organism's ability to survive extreme temperatures is directly related to the environment of the organism. This, combined with the fact that lethal temperatures of organisms are not absolute but change with the prevailing conditions, illustrates the extent and importance of acclimation. Thus organisms are known to be capable of acclimating to a given environmental temperature—the lower this temperature, the longer the period of acclimation necessary (Whittow 1970).

5 Whittow (1973) describes how thermoregulatory behavior usually involves movement. He also illustrates how poikilotherms are often capable of detecting minute temperature differences in the range of 0.10 to 0.25° C. This knowledge allows one to observe the selective behaviors of pillbugs (*Armadillidium vulgare*) thus relating the same to an acclimative effect. The following investigation strives to answer the relative questions of how pillbugs adjust (the evolutionary effect) or acclimate to three different environmental temperatures. More specifically the study addresses how these animals behave in choosing a thermally defined environment after different durations at the acclimatizing temperature.

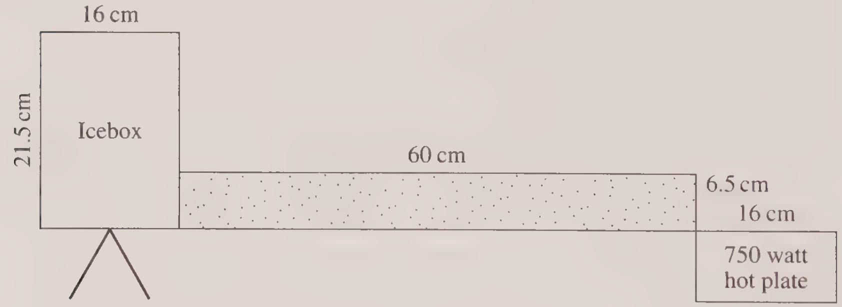
METHODS AND MATERIALS

The pillbugs (*Armadillidium vulgare*), purchased from the Carolina Biological Supply Company and used in the present study, were cultured in circular finger bowls (diameter 10 cm, depth 4 cm) lined with sand kept moist with the regular addition of tap water. Each bowl contained several pieces of bark for shelter, and the animals were fed flakes of oatmeal as needed. The oatmeal was left in each culture only until it began to mold, then was replaced with fresh oatmeal. Ten animals were cultured in each bowl, and each bowl was arbitrarily assigned a number. Bowls numbered 1 through 7 were cultured at room temperature (32.1°C STD = 5.1), bowls numbered 8 through 15 were cultured in a refrigerator (9.1°C STD = 2.3), and bowls numbered 16 through 23 were cultured in an incubator (29.5°C STD = 6.5). All cultures were kept under constant light from a 60-watt incandescent light.

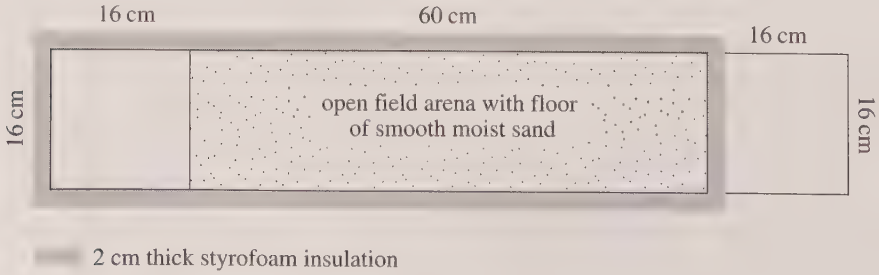
Every third day the animals from one culture of each temperature were placed in the center (equidistant from both sides and ends) of the open field arena described in Figure 1. The arena floor was covered with about 1 cm of smooth moist sand, had one end heated with a 750-watt hot plate, and the opposite end cooled with an icebox. This created a temperature gradient in the arena ranging from about 11°C to about 40°C during any given test run. The 10 animals in the arena for each study were observed for 30 minutes; the lighting during the behavioral study was provided by overhead fluorescent lights. Behavioral observations were made of each pillbug's final location within the gradient, and a temperature probe was used to determine the exact temperature at such locations. Upper temperature limits were measured for each group as the hottest point to which any individuals from the group would venture during the 30 minutes of observation.

FIGURE 1. *Open field arena housing temperature gradient used to observe thermal acclimation effects on temperature habitat selection by pillbugs (*Armadillidium vulgare*). The device was constructed of a short glass-walled arena insulated on the outside with styrofoam. The gradient floor was covered with moist sand, one end heated with a 750-watt hot plate, the other end cooled with an icebox.*

Side view


16 cm
21.5 cm
Icebox
60 cm
6.5 cm
16 cm
750 watt
hot plate

Top view


16 cm
60 cm
16 cm
16 cm
open field arena with floor
of smooth moist sand
16 cm
2 cm thick styrofoam insulation

RESULTS

Observations during the course of the present study revealed that each temperature culture group behaved in a characteristic fashion when placed within the temperature gradient. Animals cultured at the warmest temperature (incubator) tended to move toward the colder end of the gradient. Later stages of the study revealed that this group concentrated more and more at colder temperatures as illustrated by Figure 2.

Animals cultured at room temperature tended to scatter somewhat throughout the arena and respective temperature gradient. This resulted in greater mean final location temperatures (Figure 2) than the incubator groups. Over the duration of the study both the incubator and the room temperature groups illustrated a correlation of the means of the final temperatures of location both having linear regression values of $r = 0.10$ for the refrigerator cultures as seen in Table 1.

The cultures tested from the refrigerator behaved very differently,

FIGURE 2. *Final location mean temperatures (error bars represent the standard error of the mean) for three sets of groups each of 10 pillbugs (*Armadillidium vulgare*) tested within a temperature gradient every third day of culture. Each set is cultured at a different temperature: refrigerator 9.1 ± 2.3°C, room temperature 23.1 ± 5.1°C, incubator 29.5 ± 6.5°C; variation is standard deviation.*

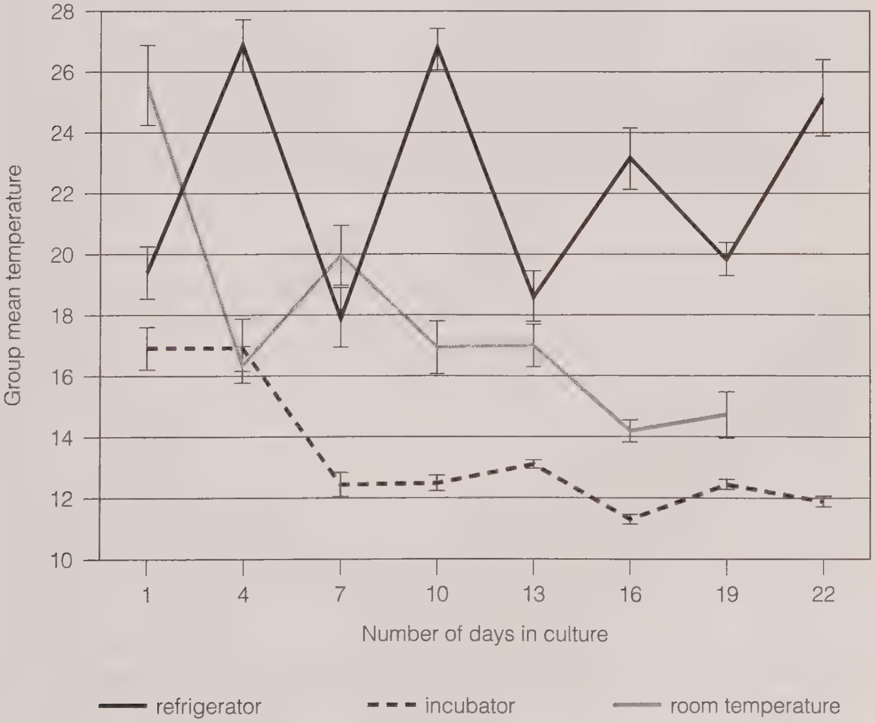


TABLE 1. *Linear regression values showing correlation of the series of means for each set of temperature culture groups as recorded through the 19 days of investigation*

Test culture group	r value of regression correlation
Refrigerator	0.10
Room temperature	0.79
Incubator	0.79

each individual hardly ever coming to rest in any one spot for a lengthy period of time. Rather, these animals would continually intersperse resting with moving, so that when final location temperatures were measured at 30 minutes all of these animals were in quite different locales each time. This results in the widely varied and oscillating pattern of final temperature means seen in Figure 2, for this set of test groups.

Analysis of variance of the final location temperature means of the three culture groups was done using the Kruskal-Wallis test. This analysis was done for the data collected early in the study, at day 4, and again for data from day 19, near the termination of the study. This test for day 4 showed there to be a significant difference between the three means, $p = 0.008$. On the other hand, day 19 showed no significance in the differences between the means, $p = 0.26$.

Further analysis of the mean final location temperatures within each culture set compared from day 4 to day 19 showed no significant difference for the means of two of the groups. Two-sample T tests on both the refrigerator and room temperature data produced p values of 0.10 and 0.14 respectively. The same test on the incubator group produced a value of $p < 0.001$, showing a high degree of significance in the difference of means from initiation to termination of the study.

During each test of the study it was observed that each group of bugs would go a specific and characteristic distance from the hot end of the arena before very abruptly turning in the opposite direction. Graphical analysis of this observed difference for each group shows that the incubator set illustrates a slight trend of increasing tolerance to hotter temperatures. The room temperature group also shows a tendency toward tolerating an increasingly warmer temperature with much less variation. The refrigerator group shows a somewhat erratic pattern of temperature limits as shown in Figure 3. During the day 19 test of the incubator group, one of the animals seemed to have crossed this "barrier" line of tolerance. It immediately began very jerky spastic movements, and within 10 seconds had flipped over onto its back, and ceased all movement within the subsequent 10 seconds.

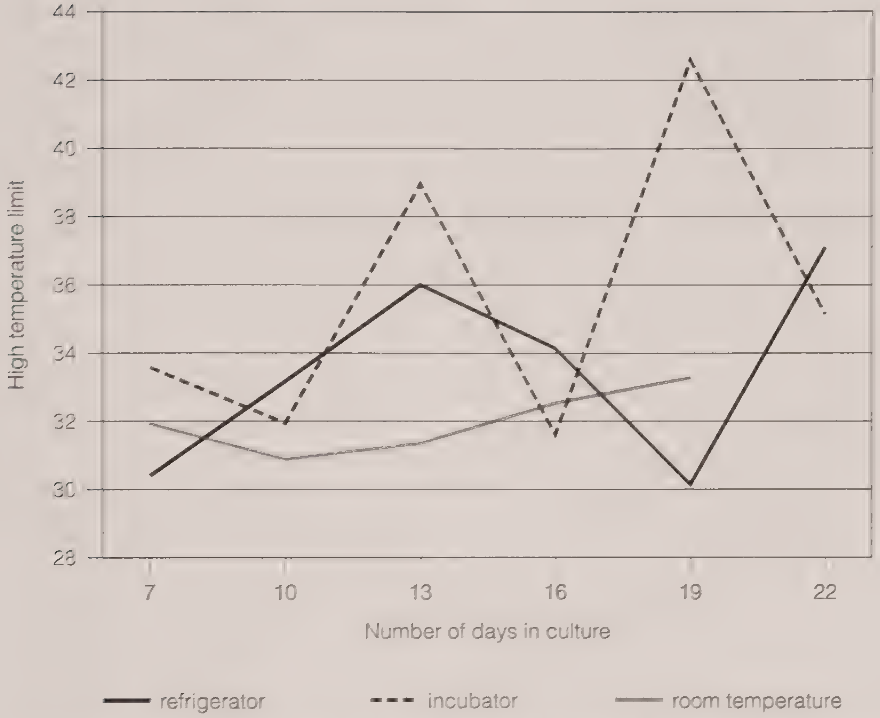


FIGURE 3. *Upper temperature limits for three sets of groups of 10 pillbugs Armadillidium vulgare tested within a temperature gradient every third day of culture. Each set is cultured at a different temperature refrigerator 9.1 ± 2.3°C room temperature 23.1 ± 5.1°C, incubator 29.5 ± 6.5°C variation is standard deviation No variation or error is illustrated as the limits were determined at the single warmest point reached by any individual of the group.*

DISCUSSION

The data recorded in the study seem to suggest several specific things. Initially it ought to be concluded that the species studied is not extremely sensitive or adaptive in the acclimative sense. As was previously seen in Figure 1, there is no clearly defined trend in the data illustrating a specific tendency of any of the three culture groups to become so acclimated to the given temperature so as to seek out such a temperature, or a proportionately related one, over the duration of the study. As the graph in Figure 1 illustrates, there is a slight decrease in the group mean temperature of final location for the room temperature and incubator animals over time, but not for the animals of the refrigerator cultures.

This graph also illustrates the mean final location temperatures as an inversion of the culture temperatures for the groups from the incubator and the refrigerator. This is most likely accounted for by an overcompensation effect of the animals observed. If indeed both the refrigerator and the incubator produce temperatures too distant (too cold and too hot respectively) from the preferred temperature range, the animals can be expected to venture in the opposite direction. From the observation one can thus predict that the 30 minutes of observation were not actually long enough to allow for an accurate pursuit of this preferred range, but rather catches the animals located a considerable distance from their respective culture temperatures.

The fact that the Kruskal-Wallis test indicated no significant difference in the final location mean temperatures of day 19 emphasizes some of the variation seen within the data. Further, two-sample T tests (Table 2) show that the incubator mean is in fact significantly different between the groups due to more than the expected variance and error of study. The presence of a similar significant difference between the room temperature and the other two groups on day 4 leads one to question if the difference noted on day 19 can be attributed to thermal acclimation at all.

When the final location mean temperature of day 4 is compared to that of day 19 within the same culture set of groups, it becomes clear that acclimation must have some definitive effect over time. Two-sample T tests of these data points indicate that the only significant difference within the set is found within the incubator group where $p < 0.001$. This leads to the conclusion that over the 19 days of study the incubator individuals illustrated a significant difference in the temperature gradient area where they were located following the 30 minutes of observation.

The slight increasing tendency of incubator groups to be able to withstand hotter temperatures indicated in Figure 3 directly correlates with previous acclimation work done in other species (Edney 1964). The incubator cultures clearly illustrate how a longer exposure to a given temperature can be expected to acclimate the animals so as to be able to better cope with or tolerate extreme temperatures. The observation of the "wall" in the arena at the hottest temperatures indicates

TABLE 2. *Means of final location temperatures of each of three temperature culture groups of* Armadillidium vulgare, *recorded on days 4 and 19 of investigation*

Test culture group	Day 4	Day 19
Refrigerator	26.80 (.72)A	19.80 (.40)A
Room temperature	16.28 (.42)B	14.61 (.69)A
Incubator	16.87 (.82)A	12.41 (.21)B

Means (standard error of the mean in parentheses) sharing a common letter within a column for no significant difference ($p > .05$).

> that the bugs in some sense must be able to sense a temperature that would be detrimental. Further observation of the individual that crossed this line on day 19 and began to move spastically before its quick demise suggests that the sensing of this detrimental condition is very accurate, and indeed the pillbug (*Armadillidium vulgare*) is able to sense very minute temperature differences (Whittow 1973).

(I have deleted the list of references because they do not help us study the question of focus.)

Questions for You

Begin with the questions that form the core of this chapter: Is the focus appropriate? How did the paper establish focus? How does the paper maintain focus? You can assume that the answer to the first question is yes because the topic was approved by the professor, but what exactly is the focus? Can you find the paper's hypothesis and main conclusions? Does the paper use the abstract and introduction to establish its focus clearly? Point out specific ways in which the paper maintains its focus. Suggest ways of improving the way the focus is established and maintained.

Now consider some of Clarence's questions. How would you answer the following?

- Is the 1st paragraph of the intro the place to convince the reader of the relevance of such acclimation in the world in general?
- Do I even need to try to convince my audience of the usefulness of my study?
- Is the granting of the bugs' temperature sensitivity an effective way to end the paper? Does this adequately tie up all the loose ends and give positively supported "facts" or enter a whole new scenario which is actually my largest assumption?

Having read all the materials in this workshop, are there any questions you have about focusing in the natural sciences? If you had written Clarence's paper, would you have any questions to add to his list? If so, what would they be?

SOCIAL SCIENCES

In each discipline, what writers believe about the reality of the subjects they study determines their choice of focus. Writers in the humanities, assuming that their subjects cannot be known with concrete certainty, focus on interpretation for the purpose of enrichment. Therefore, they concentrate on both the subject and the voice of the interpreter/writer. Natural scientists, assuming that the things of nature behave and exist in accordance with known and knowable laws and that we possess reliable methods for measuring these things, focus on concrete findings—facts that exist in relation to other known facts. Business writers, concerned with the fact that decisions must be made and actions taken, focus on concrete problems and possible solutions.

In the social sciences, we see a wide range of assumptions about subjects for study. An analytical study by a sociologist may focus on the need for action (such as a change in governmental policy)—similar to the purpose of a business report. The interpretive work of an anthropologist may focus on complexities and paradoxes—like the work of a literary critic. And a report by an experimental psychologist may focus on measurable experimental findings—as does the scientific paper of a biologist.

As we discuss writing in the social sciences, we will find it helpful to make comparisons to writing in the humanities and natural sciences, but do not take this to mean that the social sciences are merely crossbred offspring of the humanities and the "hard" sciences. The diversity in the social sciences makes it necessary for us, in the limited space available here, to use convenient comparisons, but that same diversity makes it necessary for you to study carefully the traditions of whichever social science discipline you are writing in.

Deciding on the Point

Diversity in the Social Sciences Because new research in the natural sciences is always based in previous research, topic choice is constrained by that existing research. This is not always the case in the social sciences. Social scientists enjoy a great deal of flexibility in choosing topics. A political scientist at my school says that people in his field do not need to focus on the hot topics: "Everybody does what he or she wants to do, and there are ways to accommodate all those people. You can get published because you write about something that no one else is writing about." A sociologist told me, "I see myself as marginal [not working in mainstream subject areas], but sociology is so diverse that being marginal doesn't mean much; there's not a penalty connected to it."

Of course the flip side of freedom to choose among topics is exposure to criticism for making poor choices. Students in the social sciences sometimes see the available diversity and the similarity among topics in the various social sciences and choose topics that go beyond acceptable boundaries.

In a political science course, for example, you may be allowed to write about the influence of theological issues on public schools, but you must focus on the *political* issues, on public school *policy*—not on the sociology or anthropology or history of the topic. It therefore becomes necessary to learn the fundamental purposes of the social science discipline you are studying before you begin to think about particular topic choices or the points you may want to make in your essays.

At the risk of oversimplifying the aims and assumptions of the various social sciences, let's imagine a spectrum running from interpretive, qualitative approaches to objective, quantitative approaches—in other words, from the kinds of research typical of the natural sciences to the kinds typical of the humanities (see Chapter 11, page 304, for a lengthier discussion of qualitative and quantitative kinds of research). At the qualitative end are some of the subjects that anthropologists choose to write about. The purpose of anthropology, says anthropologist Renato Rosaldo, is

> to describe other cultures in ways that render them familiar . . . without losing sight of their differences. Good descriptions [which are perhaps what anthropologists most value] neither bring other people so close that they become just like ourselves nor so distance them . . . that they become objectified and dehumanized. (89)

Given that purpose, and its underlying assumptions about what is real and worth studying, anthropologists write about topics like the following (all appearing in the *American Anthropologist*):

> The folk belief of Icelandic cod fishers that a skipper's knowledge and skill have more to do with successful fishing than does technology,
>
> The role of deceit in limiting political power on an island in Micronesia,
>
> Secrecy in everyday life in an African society.

You see how these topics call on the writer to focus on accurate description, on the complexities and perhaps the unknowable mysteries of the cultures studied.

At the other end of the spectrum, most psychology journals publish quantitative studies. Here are a few topics (from the *American Journal of Psychology*):

> The effect of cognitive modeling on problem-solving performance,
>
> The relationship between category width and behavior in speech-perception tasks,
>
> The effects of surface features on word-fragment completion in amnesiac subjects.

The authors of these articles have the same goals as natural scientists—to investigate their subjects with as much objective precision as possible and contribute to the accumulated knowledge of the field.

However, psychologists sometimes write with a more personal, interpretive focus. Consider the first sentence (the sentence that establishes the focus) of a personality appraisal that was written by a graduate student in psychology:

> William is a blond-haired, eleven-year-old fourth grader who appears to be shy and lacks confidence around people he does not know well.

Conversely, anthropologists regularly use scientific, quantitative methods. The authors of the article on Icelandic cod fishers include four tables and two figures in which they present their numerical data.

Our spectrum of interpretive/qualitative and objective/quantitative approaches further disintegrates when we look at examples of topics written about in sociology (from the *American Sociological Review*):

> The relationship between family structure and the risk of premarital births,
>
> The relationship between social networks and individual contributions to a collective good,
>
> Cultural influences on defining objects as art or obscenity.

And in political science (from the *American Journal of Political Science*) a similar breadth appears:

> Factors influencing voting in caucuses and primaries,
>
> The role of stereotypes in processing information about political candidates,
>
> The effect of supervision on police behavior.

All of these topics have elements that are studied objectively and quantitatively, yielding numerical data, *and* elements that defy quantification. The title of the article that studies "the effect of supervision on police behavior" highlights its qualitative/quantitative mix: "Donut Shops and Speed Traps: Evaluating Models of Supervision on Police Behavior" (and the *American Journal of Political Science*, in which the article was published, is one of the more quantitative political science journals). George Eliot (the novelist I talked about in the "To the Student" section of this book) once said that a novel must not "lapse from the picture to the diagram"; a chemist prefers the simplicity of diagrams, but a novelist must create the realistic complexity of pictures. In the social sciences—in fact, to some degree in each of the individual disciplines in the social sciences—we see both pictures and diagrams. Further, increasing numbers of social scientists are utilizing combinations of approaches (this is called "triangulation," a subject we will discuss in Chapter 11).

This discussion of the various approaches to choosing a topic should make you especially committed to reading extensively in your field and learning its limits and possibilities.

Exercise 2.7 Choosing Topics in the Social Sciences

Go to your library and select three different social science journals—in fields that interest you. Look at one recent issue (published within the past three years) from each of the journals and read the Abstracts of all the articles.

Next read the Introduction to each article. Is there more emphasis on justifying the topic choice in the social science Abstracts than in the natural science Abstracts reproduced in Exercise 2.5? To what extent do the authors of the social science articles appear to ground their topic choice in previous research?

Establishing the Focus

Establishing the Value of the Focus Before establishing the focus of a paper, writers in the social sciences often attempt to establish the value of the topic they have chosen. The social sciences do not build on previous knowledge and accumulate facts in the way the natural sciences do. In fact, the Council of Biology Editors style manual cautions writers to avoid using the introduction to "convince the reader of the importance of your research. If the reader knows the field, the importance of your research should be evident." In the social sciences, however, without the guidance of a fixed body of knowledge, writers have great freedom either to delve into new subjects or to take new approaches to old subjects. This freedom makes it necessary for writers to spend some time convincing their audiences that their topics are worthwhile. So articles often begin by saying something along the lines of

> The hypothesis that has been *widely accepted* is found to be incompatible with our evidence.
>
> *or* This subject has been *recently much debated*.

Such a statement of value tells the audience, "This particular puzzle is important, and I will offer these new pieces to fill in these empty places or to replace those old, faulty pieces." These statements also make the topic choices seem to be the natural and necessary outgrowth of previous research rather than the arbitrary choices of the authors.

Establishing Focus in the Abstract and the Introduction Most publications in the social sciences begin with an Abstract and an easily recognizable introductory section (although that is not labeled "Introduction" as often as it is in the natural sciences), so the focus is established in those two places. The *Publication Manual of the American Psychological Association*, Fourth Edition, is the manual that standardizes what is commonly known as APA style and that is used in the majority of social science publications. It lists what to include in "an abstract of a report of an empirical study." The suggestions include these three items pertaining to focus:

- the problem under investigation, in one sentence if possible,
- the findings, including statistical significance levels, and
- the conclusions and the implications or applications. (10)

For a review or theoretical article, the focus should be established in the Abstract by including

- the topic, in one sentence, if possible,
- the purpose, thesis, or organizing construct and scope . . . of the article,
- the conclusion and the implications or applications. (10)

Then, in the "closing paragraphs of the introduction," a "formal statement of the hypothesis [will] give clarity to the paper" (12).

Of course, not every successful article follows these guidelines exactly. The Abstract of the "Donut Shops and Speed Traps" article mentioned earlier states the problem to be studied—differing models of effective supervision—but ends with a question that playfully focuses the readers' attention: ". . . when is it time to lay a speed trap, and when is it time to go to the donut shop?"

More typically, however, authors observe the guidelines of the APA. The Abstract for an article by Nicola Beisel (*American Sociological Review*) is a good example. It begins with a statement of the problem:

> Censorship raises the question of how an object is deemed art or obscenity. (145)

And it includes a hypothesis that the conclusion seems to validate:

> I contend that arguments draw on cultural schemas that constitute, and are in turn constituted by, social structures. (145)

Other writers follow the APA guidelines even more closely. Thoroddur Bjarnason and Thorolfur Thorlindsson, the authors of the study of Icelandic cod fishers, begin their Abstract by announcing that the problem they focus on has "recently been hotly debated"; they then outline their method and end the Abstract with three sentences that each use the word *results* (the "findings" recommended by the APA) as the subject. The concluding sentence of their introduction asserts the hypothesis:

> We suggest that collective knowledge, the folk science of fishing, forms the basis of individual expertise and needs to be taken into account in the empirical analysis of fishing success. (373)

Consequently, readers of the article have their attention clearly focused exactly where Bjarnason and Thorlindsson want it.

Establishing Focus by Stating the Hypothesis Although the placement of an explicit statement of a hypothesis can vary, social scientists regularly include such statements. Consider these examples:

> In the Abstract of an article in the *American Journal of Political Science*:
>
> We propose a simple model . . . that . . . assumes that most people are internally conflicted over most political issues—and that most respond to survey questions on the basis of whatever ideas are at the top of their heads at the moment of answering. (Zaller and Feldman 579)
>
> In the Introduction of an article in the *Journal of Anthropological Research*:
>
> I suggest an "experiential proximity thesis" that predicts that the more abstract and rational are the native's categories, the more crisp and precise they will appear to the ethnographer; but the more intuitive and imaginal the knowledge is in the native's direct experience, especially in altered states of consciousness, the fuzzier the native's categories become. (Laughlin 17)

It is possible that social scientists, in their dealings with subjects that are sometimes "fuzzy," may find it especially necessary to set up the point of an argument with as much directness and clarity as possible.

Exercise 2.8 Establishing Focus in the Social Sciences

The student paper reproduced here was written for a sociology class. It is the first of a three-part series of papers on a "social problem." The purpose of this first paper was to identify the social problem the writer chose and explain why it should be defined as a social problem. In other words, this paper should establish the focus for the whole series of papers. How well does the paper achieve its purpose? Is the focus clear to you? If your answer is yes, explain how it establishes its focus. If your answer is no, explain why the paper fails to establish focus and suggest how the focus might be sharpened.

Black and White: The Debate over Transracial Adoption

Our society claims to have numerous social problems. And social problems necessitate social policy. Poverty, teen pregnancy, sexual promiscuity, and innumerable other circumstances have been placed under the weighty title of "social problems" and have therefore been given national attention. However, simply stating that a phenomenon is a social problem does not make it one; we must examine the situation, the people it affects, and the effects it has on society before we can truly say it is a social problem; thorough exploration and description of a social problem is needed before effective social policy can be created. 1

Such is the case with the issue of transracial adoption. While the issue has been seriously debated in only the last 20 years, interracial adoptions have occurred for about 50 years. Although the issue has been debated, and although policies have been created, there is still a lot of mystery surrounding why it has been labeled a social problem. As a result, the country seems to be at a standstill regarding the issue, and the debate has become stale. But these ideas will be discussed in a later paper. First, transracial adoption must be explained as a social problem.

The first thing that must be established is that interracial adoption does, in fact, occur. The practice of adopting across racial lines first began in significant numbers in the 1940s. Since then, there has been an increasing trend in the number of these adoptions. One source states that, of the 140,000 public agency adoptions that take place each year, about 2,000 are transracial (McRoy, 1989, p. 145); another source says that one half of the yearly 30,000 private agency adoptions are transracial (*The Economist*, 1994, p. 33). While 10% of all adoptions may not seem like a large enough number to constitute a social problem, the number seemingly grows larger as we look at the number of people who are affected by transracial adoption and the policies surrounding it.

Obviously, the children who are part of transracial adoptions are affected by the issue. Much of the debate concerning transracial adoptions focuses on the effect that being placed with parents of a different race will have on a child, and most of the disagreement revolves around this concern. The couples who adopt children of a different race are also directly affected. These parents adopt children of other races for various reasons, usually with knowledge of the debate surrounding their choice. Social workers who must place minority children in adoptive homes are affected by the transracial adoption debate. They must determine what kind of home to put a child in and must know about the issue in order to make good judgments in the placement process. Another group of people that is affected by the issue is couples who have children of other races in their foster care. It quite often happens that these families, after having their foster child for a long time, wish to adopt him or her into their families. Therefore, they too must know the debate surrounding transracial adoption. Finally, transracial adoption affects minority children who are in foster care, waiting to be adopted by a loving, caring family. The debate about transracial adoption and the policies that emerge as part of that debate directly affect whether these children will ever have a stable home and will ultimately determine the course that their lives will take.

5 Part of the reason for transracial adoption having received social problem status is that much of society has become involved in following or has participated in this debate. One way to recognize this is to look at the number of articles and books that have been written about interracial adoptions. Newspapers and news magazines for mainstream society, such as *Newsweek* and the *New York Times,* have informed a vast number of people about the debate. Specialized journals like *Social Work* and the *Journal of Applied Behavioral Sciences* have offered articles concerning the issue, as it pertains to people in these fields. Race-specific periodicals, such as *Ebony* and *Jet,* have expressed opinions from a different point of view. Transracial adoption has become a national concern that has spurred a national debate spanning a great variety of people.

The variety of people who are involved is another reason that transracial adoption has come to be seen as a social problem. This variety of people means that a variety of values is shaping the recognition, description, and prescription of this issue. While some say that it is "impossible to incorporate a black child into a white family and still promote a sense of ethnic identity" (Hayes, 1993, p. 303), others say that "the right of every child to a loving home" is more important (Collmeyer, 1995, p. 259). Social workers, families, blacks, whites, children, and adults all have played a part in shaping the debate, defining the issues most important regarding transracial adoption, and influencing policies that determine the outcome of the debate. And because the debate has racial overtones, it has been a sensitive and dividing issue.

Finally, the effects of transracial adoption must be examined in order to be able to define it as a social problem. The most obvious effects are those that occur within these mixed families. How well the children (and parents) adjust and adapt, the quality of the relationships in these families, and the individual well-being of the adopted children may all indicate the effects of transracial adoption on the family. The success of these families may well influence the policies that will be made concerning transracial adoption.

Adoption agencies also feel the effects of the transracial adoption

> debate. While the agencies must concentrate on placing children in appropriate homes, they must also contend with those on each side of the debate and with the policies that have been generated by it. They must find good homes for the children in their care, yet they may also have to turn possible families away simply because of their race. The issues of interracial adoptions continually make it more difficult for these agencies to do the best job that they can.
>
> When interracial adoptions first gained popular support, it was theorized and hoped that one of the effects would be further racial integration and harmony. However, the incidence of transracial adoptions has not had this effect. Rather, the debate has seemed to breed disharmony for some. Those at opposite ends of the debate have tended to become further polarized as arguments have been flung from both directions. While individual families have stepped across racial boundaries, the effort has not spread to society as a whole.
>
> 10 The effects of transracial adoption have probably hit the foster care system the hardest. While thousands of minority children find themselves stuck in the foster care system, our society is debating whether or not it is good for them to be placed with racially different parents. Meanwhile, time is running out for these children. Many of them have had opportunities to be placed in loving homes, but the opportunities have been thrown away because this country has not come to a definite stance on the issue. As a result, the children often lose their chance to belong to a family and become permanent wards of the foster care system. One effect is that more and more money is spent on the foster care system; but a more important effect is that the lives of many of these children are lost forever.
>
> Transracial adoption is a social problem that needs to be given more national attention. While the number of transracial adoptions may not seem very large, large numbers of people are affected by it and have been affected by it for 50 years. The entire nation has taken notice, but not enough. The fact that the debate still rages and poses complications for so many people—families, adoption agencies, children in foster care—is more the social problem than transracial adoptions themselves. It is time that this country recognizes this social problem and decides what to do about it.

(I have deleted the Works Cited list because it does not help us study the question of focus.)

Maintaining the Focus

Using Key Terms from Hypotheses to Maintain Focus In the same way that a clearly established thesis can be used in the humanities to maintain the focus, a hypothesis in the social sciences gives an author means for setting up key terms and ideas on which to keep the readers' attention focused. Let's go back to the article on "fuzziness" for an example. The author, Charles D. Laughlin, uses something called "fuzzy set theory" (he was not just trying to be cute with language; it is a widely discussed and important theory) to demonstrate the validity of his hypothesis. Laughlin argues that ethnographers (people who observe and describe human cultures) use categories in their descriptions and that they tend to make these categories "crisp" (rational, logical, inelastic) when more often they should be "fuzzy" (imprecise, vague, elastic). When people are in the process of experiencing something, their understanding is fuzzier than when they later go back and think about and categorize their experience. Consequently, ethnographers need to use fuzzy categories to describe experience. Laughlin uses the example of the Theravadin Buddhists to demonstrate his ideas.

Look again at the early articulation of the hypothesis:

> I suggest an "experiential proximity thesis" that predicts that the more abstract and rational are the native's categories, the more crisp and precise they will appear to the ethnographer; but the more intuitive and imaginal the knowledge is in the native's direct experience, especially in altered states of consciousness, the fuzzier the native's categories become. (Laughlin 17)

Now consider Laughlin's key terms: *fuzzy*, *crisp*, *categories*, and *experience*. Counting the number of times each term is repeated helps us to see how Laughlin uses key terms from the hypothesis to maintain focus. Table 2.1 shows the number of repetitions of each key term (and its various forms,

TABLE 2.1 *Frequency of Key Words*

	KEY WORDS			
Section Headings	*Fuzzy*	*Crisp*	*Category*	*Experience*
Fuzzy Set Theory	24	3	14	1
Ethnology, Categories, and Fuzzy Set Theory	16	2	22	1
The Experiential Proximity Hypothesis	12	3	23	38
Fuzziness and Transpersonal Experiences	6	4	5	20
Theravadin Buddhist Categories of Consciousness	7	6	26	10
Conclusions	8	6	7	12
Totals	*73*	*24*	*97*	*82*

i.e., *fuzzy, fuzziness, fuzzed*) in each of the main sections of the article. You should also notice how the language and logical flow of the section headings helps to maintain focus. (The article is roughly 6,000 words long, or about 25 pages of double-spaced type.)

The totals for the repetitions of key words should come as no surprise; key terms in a well-focused piece of writing get repeated often. Since the concept of "crispness" is being brought into question and discounted, it is mentioned less often than the other keys. It is also interesting to note how often *fuzzy* is repeated early in the paper, when that concept is being established, and how it is repeated less once it is established. The idea of "experience," hardly mentioned in the first two sections, explodes on the scene when Laughlin proposes his experiential proximity hypothesis; and then it remains very actively in the foreground.

Student writers often worry about repetition, but professional writing shows us that key terms, and their synonyms, must be repeated.

Maintaining Focus through Structure Laughlin's article does not conform to the IMRAD pattern of scientific articles (Abstract, Introduction, Methods, Results, and Discussion). When social scientists do follow this standard form, maintaining focus becomes easier. First, the Abstract and Introduction concisely emphasize both the problem to be studied and the hypothesis. Then the Methods and Results sections have an obvious focus on the concrete information about procedures and findings. And, finally, the Discussion refocuses attention on the hypothesis and conclusions and then ends by emphasizing implications for further research. Regarding the Discussion section, the *Publication Manual of the American Psychological Association* advises writers to

> open the discussion with a clear statement of the support or nonsupport for your original thesis. Similarities and differences between your results and the work of others should clarify and confirm your conclusions. . . . Identifying the practical and theoretical implications of your study, suggesting improvements on your research, or proposing new research may be appropriate, but keep these comments brief. (18–19)

These should be fairly easy guidelines to follow as you attempt to maintain a clear focus.

Exercise 2.9 Maintaining Focus in the Social Sciences

Writing in the social sciences often takes a form similar to that of writing in the natural sciences—the IMRAD format that we discussed in the section on the natural sciences. However, some social science writing seems more like writing in the humanities. Exercise 2.6 gave you an opportunity for studying the way in which focus is maintained in an IMRAD format; here you have a social science paper in a form more typical of humanities papers.

The following essay was written by a student in an introductory political science course. Students were asked to respond to an idea from a famous political scientist. How well does this essay maintain the focus it establishes in the first paragraph? What are the strategies it uses to maintain focus? How could these strategies be improved? Could any other strategies be employed? If so, what would these be?

The Relationship between Governmental and Personal Morality

1 The Italian political thinker Machiavelli argued that personal morality conflicts with political expedience. According to Machiavelli, a political leader cannot rule effectively without using power, and power often operates without regard to morality. I disagree with Machiavelli that governments should be excluded from the restrictions of personal morality. Thinking of morality as a guiding principle of conduct enables both governments and individuals to make moral decisions about complex situations.

In the *Republic*, Plato develops an analogy between individual and governmental morality. The soul of a just person is balanced and ordered. Likewise, the just city is well ordered under the control of the philosophers. Additionally, the order in a just person's soul manifests itself in righteous actions. Similarly, in a just society, political expedience and morality will coincide, eliminating the tension between them.

The just republic can never be fully realized, however, because almost every choice involves some sacrifice. In certain instances, individuals must decide whether to kill another person. Consider, for example, a man walking down a dark alley with his wife. A thief appears and holds a gun to the woman's head. In the meantime her husband draws his own gun. Should he shoot the thief to protect his wife, or should he risk the possibility that the thief will not shoot her? In making this moral decision, the man will likely consider the urgency of the situation and the probable consequences of his action. However, his moral character will largely determine how he reacts to this situation. If he is a rash person with no respect for the lives of strangers, he will quickly shoot the thief; but, if he has respect for human beings, he will make certain that his wife is in grave danger before he shoots.

Like the individual in the preceding example, governmental involvement in war will not be perfect and must be based on a specific situation. The United States entered World War II partly because of an important moral principle, defending the world against the terror of Nazism and Fascism. However, millions of soldiers and civilians, including thousands of Americans, were killed in the war. One might question the morality of such a war. However, it seems likely that if Hitler and Mussolini had conquered Europe, they would have terrorized and brutalized the entire continent. Weighing the cost of the war against the evils that it prevented seems to favor governmental action in this instance.

Just as the man's decision about whether to shoot the thief was rooted in his personal character, governments must base their decisions about warfare on virtue. Leaders should examine their motives for waging war. Many wars have been fought over economic or political concerns that are no threat to the well-being of common people. In some cases, moral codes must be broken to promote a higher good. For example, if one could prevent a third world war by fighting a war against one state, war in this case might be a necessary evil. Second, one should consider the full ramifications of war. Very few wars fought over political or moral ideologies can justify the immense suffering of war, especially when one considers that civilians will be raped and killed and that terribly inhumane methods such as chemical weapons will be used to kill. 5

Governments must be held to moral standards just as individuals must. Viewing morality as a principle rather than a set of rules can help one to think of government's goal as finding the greatest good rather than seeing the most politically expedient choice in each situation.

WORKSHOP 3

Focus in the Social Sciences

The essay that we will use for all the social sciences workshops (Workshops 3, 7, 12, and 13) was written for an educational psychology class. Marji, the author, was a senior special education major. After explaining the assignment, we will look at Marji's concerns and questions; then you can see the final draft of her paper. Finally, you will answer some questions about the paper.

THE ASSIGNMENT

Marji's teacher gave the assignment below (labeled "First Version"). Later in the term, the teacher decided to change the nature of the assignment, and that change created many interesting decisions for Marji. In particular, it made her think about the differences between writing quantitative and qualitative studies in the social sciences. After the course ended and Marji talked with me about her paper, she decided to write to her teacher and ask why the assignment was changed. Printed here are the first and second versions of the assignment and the letter that Marji's teacher wrote to explain her reasons for changing the assignment.

(First Version)

Descriptive (Staff) Review of the Child/Adolescent Introduction and Outline of the Process, Descriptive Headings

The primary purpose of the descriptive review of a child/adolescent is to bring together valued perspectives, in a collaborative process, in order to describe the child's/adolescent's experience within the school setting. An underlying assumption of the process is that each child/adolescent is active in seeking to make sense of their experiences. By describing the child/adolescent in as full and balanced a way as possible, participants can begin to gain access to the child's/adolescent's mode of thinking and learning and to see the world from their point of view.

The child/adolescent is described from multiple perspectives in order to obtain a balanced portrayal, one that neither overemphasizes current difficulties nor minimizes ongoing concerns. The presentation of the child/adolescent is organized according to the following descriptive headings.

1. Physical presence and gesture
2. Disposition, temperament, emotional tone
3. Relationships with peers and adults
4. Activities, interests, preferences
5. Formal learning

(Second Version)

CHILD STUDY PROJECT

Children come to school with unique backgrounds, families, cultures, and experiences. In order for you as a teacher to provide "responsive instruction," you need to learn about the children in your classroom beyond what a cumulative folder or formal evaluations might say. What really makes your students "tick"?

Purpose

The purpose of the Child Study Project is to help you focus on one particular child to help you begin the process of "kidwatching." To really gain a clear picture of who our child is, we must use as many data sources as possible, including the following three for this project: interview, examination of student work, and our participant observations in several contexts (classroom, hall, lunchroom, etc.). This process of collecting information about students will be vital in your teaching profession since teachers are often called upon to participate in Child Study Teams, which are building-based, pre-referral meetings that decide whether or not a child should be referred for special education services.

Product

Choose a child in your classroom who is on the "fringes" of the classroom community. This child might be a special education student, a student who may be referred for special education, or a student that doesn't seem to be participating fully in the learning community of the classroom. You will write a case study paper about this child in your classroom. From a formal interview and the descriptive review, you will attempt to understand your child more deeply. You should ask questions about your child's background, participation in the school and classroom cultures, and beliefs about him/herself, his/her role in the classroom, school in general, and learning.

Interview

The purpose of the child interview is to help gather firsthand information about your particular child and how s/he talks about his/her background, school, learning, etc. You will construct a 15-minute interview and give the interview to the student you are studying. You should tape the interview and take notes on the student's responses and demeanor in the interview. Then transcribe the interview for your analysis.

DESCRIPTIVE

Review

The descriptive review is an observational tool that can be used to better understand your case student. The focus of the review is to understand your child's "stance" in the world—what make him/her happy, sad, what types of activities is s/he drawn to, who are his/her friends, how does s/he learn and participate in the learning community of your classroom? This review is a support for your observations and asks specific questions for you to consider.

Final Paper

You will write a formal case study paper based on an analysis of your collected data. From your interview and observations develop a comprehensive picture of your child including examples of the student's talk in the interview, work samples (with any identifying information removed), and other examples from your observations that might support your understandings.

THE TEACHER'S EXPLANATION OF THE CHANGE IN THE ASSIGNMENT

What I was hoping to give you a taste of is a structured experience of what current educational researchers are doing. Most research in education no longer imposes a set of questions on a classroom setting and tries to get those questions answered. That is what quantitative research does.

Now, however, your teachers will be reading about and doing more qualitative research, where the researcher begins with questions but the questions are only guides to investigate what really might be going on—different topics, categories, etc. may arise.

The questions I gave you [in the second version of the assignment] guide educators to think about "at-risk" students wholistically. Too often students are put in special ed because of test scores, and that doesn't give the whole picture of the child or help the classroom teacher meet the child's needs. The questions seemed to be a good resource for you as future teachers, but also a good starting point for learning how to study a child as you will when you are a teacher.

MARJI'S QUESTIONS ABOUT FOCUS

After learning about the change in the assignment, Marji felt uncertain about how to focus. Though she did not write down many questions in her journal, she did ask some difficult and perceptive questions. In particular, she was unsure about the degree to which she needed to focus on objective, "scientific" facts and conclusions or on subjective observations and interpretations. She clearly felt that she could not do both.

- Should I be *presenting* information or *analyzing* it? Should I say, "I *observed* . . . " period; or "I observed and therefore *conclude* . . ."; or "I observed and therefore would *do* . . ."?
- How can I come up with themes? My prof told me to *interpret* the information and then invent the themes, but I was influenced by the fact that I liked the student, so I didn't feel as if my interpretation and decisions about themes was objective; or did the new assignment allow me to be less objective, less scientific?
- Can I pull together all these disjointed sections and make a point? clarify the purpose?

MARJI'S PAPER

Learning about Students through Observations, Interviews, and Evaluations: The Child Study Project

ABSTRACT

Leanne had a stomachache, and the front-end loader outside the window was making a lot of noise as she filled in circle after circle on her standardized test. When she received her scores telling her that she functions below average, she was devastated. Are these test scores an accurate account of Leanne's knowledge and abilities? These snapshots of students are used to place them, label them, and develop expectations 1 of them. To avoid incorrect assessment, teachers should develop a much broader picture of their students. To do this, a teacher should look at students' formal learning, as well as their social interactions, attitudes, and efforts over a period of time. For this project, I observed one student for about a month. I was able to get a better understanding of Dan as a learner and person. The paper develops the themes of sensitivity, motivation, and love for people which run throughout Dan's personality and life. These themes are looked at in terms of Dan's interactions with others and the way in which he engages in learning.

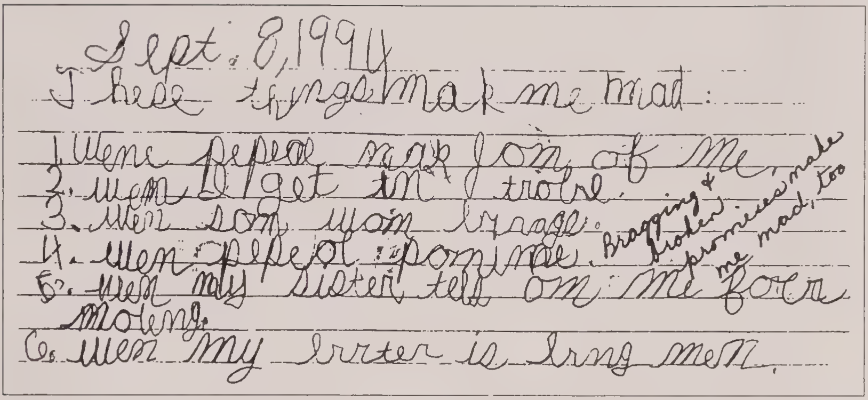
INTRODUCTION

Scott's IQ is 100. Does this number become who Scott is in the eyes of his teachers? Does it tell his teachers the important things there are to know about Scott as a student? Teachers in the field of elementary and special education must have the wherewithal and the knowledge to accurately assess their students' abilities, efforts, and personalities in order to give them the best services and opportunities possible. There is a lot of controversy about the accuracy of assessing students with standardized tests, and therefore researchers are exploring new ways of assessing students' needs and abilities. This knowledge about students is helpful for special service referral and for responsive teaching. It is good to gather this knowledge about both excelling and struggling students. The most effective teachers know their students. I have spent time observing and talking with one particular child during the past month. During this time I have been able to discover more of who he is as a student and, more importantly, who he is as a person.

METHODS

In order to gather information about Dan in many different areas of his life, I employed several methods. The first couple of days of my research I observed Dan in a formal learning environment. I took field notes on what he was doing during direct instruction time, group work, and individual seat work. I tried to pay attention to his physical mannerisms and verbal contributions. I also observed Dan on the playground and during the lunch period in order to understand his social interactions. After gathering my observation notes together, I developed some interview questions in order to fill in some of the details and answer some questions about which I had been wondering. Next, I examined some of his formal writing. Finally, I looked at the nine-week teacher and student evaluation of his progress and a sociogram which was completed by all students in the class.

The key pieces to Dan's puzzle as a learner and a person are his strong motivation, his love for people, and his sensitivity. These personal



Sept. 8, 1994
Thsee tyngs mak me mad:
1. Wene pepeal mak fon of Me.
2. Wen I get in trobe.
3. Wen som won brage.
4. Wen pepeol pomise.
5. Wen my sister tell on Me foer moteng.
6. Wen my brter is brng men.

Bragging & broken promises make me mad, too

FIGURE 1. *Journal entry on things that make Dan mad.*

characteristics affect the way he interacts with his peers and the way he engages in his formal learning.

THREE THEMES OF DAN'S PERSONALITY

Sensitivity

Dan is very aware of his own and other people's feelings. He has a kind and gentle spirit, which shows in the way he understands the good and bad in life. In Dan's journal writing he listed that which makes him sad, mad, fearful, and happy. In Figure 1 Dan says that he gets mad when people make fun of him, when people brag, and when people break promises, just to mention a few. These are very wise things for a fourth grader to be saying. In these comments, he displays an understanding of the way people should act toward each other by knowing the way in which they should not. In order for these things to make him mad, Dan must be sensitive to them. 5

Interaction with Others Dan's sensitivity is reflected in the way he interacts with others. Dan's interactions with others can be characterized by things he does and does not do. First, Dan does not interrupt others while they are speaking. He does not take or tarnish other people's property, and he does not speak in an unkind manner to his peers. You will not hear Dan tell others that they are dumb, or ugly, or no good. Now for what Dan does. Dan shares himself with others. For example, each day during the time of prayer Dan offers requests and is willing to pray aloud for persons and things on the day's prayer list. Dan includes others in his activities, recognizing the importance of friends. In the interview Dan explained that Aaron and Ben are his friends for two reasons: they ask him if he is okay when he is hurt, and they include him in their activities. This again shows his sensitivity to his and others' feelings.

Engages in Learning Dan's sensitivity extends beyond interaction with persons to his learning style. Dan is sensitive to his performance and his effort. Evaluating himself after nine weeks of class, Dan rated himself lower than his teacher in all of the academic areas included on the report card. His evaluation appeared thoughtful and sensitive, not a modest act or an act of low self-esteem. Dan is very aware and sensitive to himself and others.

High Motivation Dan functions at a lower level than the average student his age. He is given extra support with his reading skills in the resource room every day. In the interview Dan explained that there are six students working with him every day in the resource room on their reading skills. His writing displays a smaller vocabulary and lower spelling skills than his peers'.

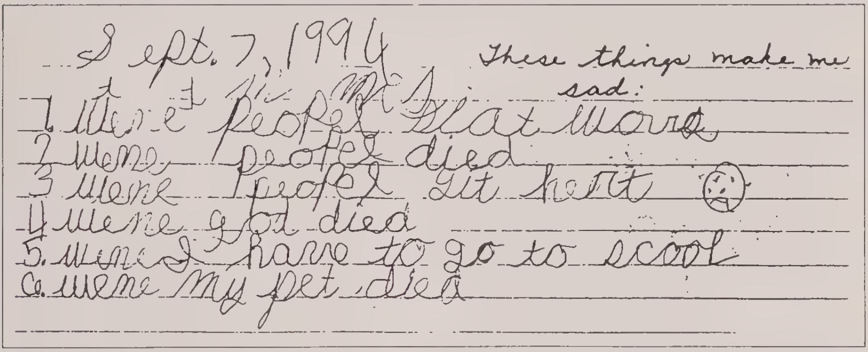
Interactions with Others Due to Dan's high level of motivation in the face of struggles, he often tunes out those around him during a formal learning experience. For example, while all the other students are raising their hands to answer a question, Dan keeps on working on the answer himself. He could just stop and wait for someone else to answer, but instead he stays focused on the task until he figures it out for himself. Dan will often mouth the words he is reading while all this action is going on around him. He sits very still, never getting antsy or bothering others while they are trying to work and think. He raises his hand when he is confident of his answer, but does not snap his fingers or make lots of noise to attract attention to himself. He will ask for help when he needs it, but Dan does not depend on those around him to do the work. 10

Engages in Learning As you can see from his interactions with others, Dan has not resigned himself to doing poorly in school, but rather continues to display great effort. Dan consistently works up to his ability level and has displayed progress over the year. Dan works especially hard with math because, as he said in the interview, he enjoys figuring things out. In talking with Mrs. J., I discovered that she feels that Dan is working up to his ability level and even pushing himself. This can only be true if he is motivated to do so. Dan consistently turns in his assignments completed and on time. He is always prepared for his spelling test on Fridays because he has studied during the week. When evaluating himself, Dan wrote that he feels he could work harder. He is sensitive to his own efforts, recognizing and evaluating them. This is an advanced ability for such a young student. All of these things show that Dan is truly working hard to understand the world.

Love for People Beyond Dan's sensitivity and motivation is a genuine love for people. As discussed earlier, Dan values friendship highly and is sensitive to those around him. People have a great effect on Dan, making him both sad and glad.

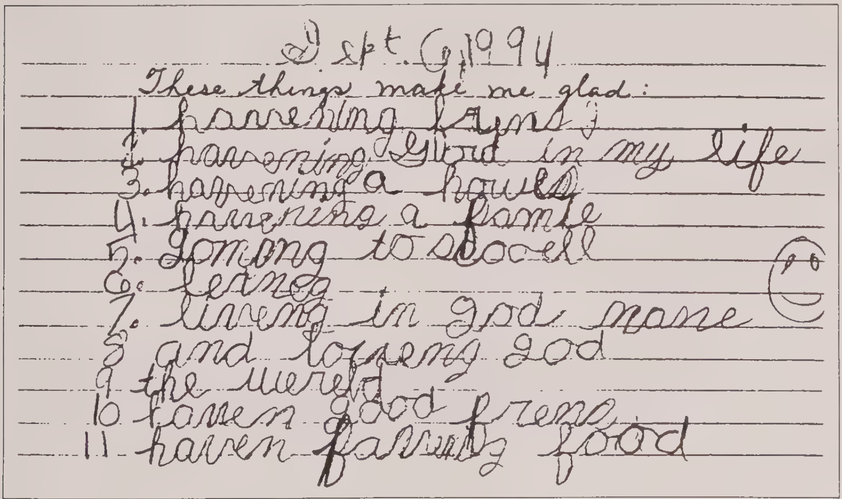
Interactions with Others In Figure 2 Dan lists the death of others as the number one thing that makes him sad. And he says further that he is sad when others are hurt—not when he gets hurt, but when others get hurt. Dan is focused on people around him, not himself. As mentioned earlier, Dan offers prayer requests quite frequently. The most common request is for a family member who is ill or injured. Again we see that Dan is worried about others, showing a love for those people. In contrast, people also make Dan very happy. The number one thing

FIGURE 2. *Journal entry on things that make Dan sad.*



Sept. 7, 1994 These things make me sad:
1. Were peopel that ware
2 wene peopel died
3 wene peopel git hert
4 wene god died
5. wene I have to go to scool
6. wene my pet died

FIGURE 3. *Journal entry on things that make Dan glad.*



Sept. 6, 1994
These things make me glad:
1. havening fryns
2. havening God in my life
3. havening a house
4. havening a famle
5. Goming to scooll
6. Lerneg
7. liveng in god name
8 and loveng god
9 the werld
10 haven good frene
11 haven favrity food

that makes him happy is having friends, and in Figure 3 we see that he writes that his family makes him happy.

All of these ideas about people and their effects on his life shape the way Dan interacts with others. If Dan did not value others, he would not treat them with the respect and concern which he does. One day a fellow student was upset and crying; Dan walked up to this person and told him it wasn't his fault and asked him to come and play. This is the kind of behavior that characterizes Dan. 15

Engages in Learning The effect of Dan's love for others on his learning appears mostly in the form of his desire to know about others. Despite the fact that Dan's favorite subject is math, he seems to enjoy learning about people. The books he has read independently this year all deal with groups of people in the past and in the present. For example, he read one book about the Navajo Indians. He didn't have to do this; he could have read about rockets. The other effects of his love for people on his learning have been discussed previously. Dan is respectful and sensitive to other learners around him.

Conclusion Scott is not just his IQ score, and neither is Dan. Teachers must go beyond the numbers charted by norm-referenced tests and assess their students as whole persons whose abilities change and form with time. Teachers must look at the ways in which their students learn best and tap into those things. Assessment should be done in a number of areas and over a period of time, which is why I looked at Dan in a number of environments for about a month. This, however, is only the beginning of understanding Dan as a learner and person. Teachers, assess your students on the basis of what they can do. Look for their talents and help them develop and use them. Dan is more than a struggling reader; he is a sensitive, motivated student who loves people. Look for the Dans in your classroom.

Questions for You

Begin with the questions that form the core of this chapter: Is the focus appropriate? How does the paper establish focus? How does the paper maintain focus?

Marji's Abstract and Introduction both begin with a story. Do you think that they are appropriate? How does she use the stories to establish the focus?

Is there a hypothesis in Marji's paper, either explicit or implicit? Should there be a hypothesis, or does the qualitative approach stipulated by the second version of the assignment make it impossible to develop and test a hypothesis?

Remember Marji's uncertainty about focusing in light of the change from an objective to an interpretive assignment:

> I didn't feel as if my interpretation and decisions about themes was objective; or did the new assignment allow me to be less objective, less scientific?

How does her essay answer this question? In other words, if she is not focusing on accumulating statistical evidence to prove a hypothesis, what is she focusing on?

How would you improve the point of focus, the methods of establishing focus, or the methods of maintaining focus?

Having read all the materials in this workshop, are there any questions you have about focusing in the social sciences? If you had written Marji's paper, would you have any questions to add to her list? If so, what would they be?

BUSINESS

What are the questions that are considered legitimate in business? Business writers ask a huge variety of questions, so focus can vary widely. Generally, however, because the purpose of business writing is to effect action, it follows that business writing focuses on the items—data, recommendations, deadlines, policies, procedures, and so on—that facilitate making the decisions that lead to actions. These items often cannot be contained in a single statement.

Effective business writers also face enormous pressure to be precise and to meet strict time schedules. Those pressures, in turn, demand that business writers clarify a focus quickly and maintain it sharply.

Ultimately, the purpose of every piece of business writing is to bring its audience to make a decision—to buy a product, to change a company policy, to create a new company division. If you hope to accomplish this very concrete purpose, you must learn to focus your writing. One successful business manager put it like this: "We are in the business . . . of making recommendations. To leave that to the interpretation of the reader, in our business, is a fatal error" (Brown and Herndl 20).

Deciding What to Focus On

Defining Problems and Topics in Business A study of successful writers in a business management class discovered that these students followed a three-part process: they began by defining a problem for which they were to propose a solution; next, they analyzed the problem and possible solutions; and, finally, they recommended the best solution (Walvoord et al. 52). Note especially the starting point: business writers begin with a problem. They learn that they must conclude with a call for the audience to take some action, and they must recommend some particular action. To get to that end, they begin their thinking by spelling out the problem? For example:

an old customer has not yet bought a new product,
production has fallen off at one of the company's plants,
the vice president of sales makes too many grammar mistakes.

The more precisely you define the problem, the more effectively you can analyze possible solutions.

When a problem is defined, the purpose of writing is defined. If falling production ails your company, you will write a report in order to recommend solutions that will increase production. One business-writing textbook suggests using a specifically stated purpose in a piece of writing to measure its success. If, for example, a specified problem/purpose of a report is to increase production by 15 percent, the writer can later determine how successful the written report was by determining if production increased by 15 percent.

Unfortunately, some beginning business writers use models that they carry over from other courses. For one paper in the management class mentioned earlier, students were supposed to evaluate the effectiveness of the layout and work designs at two fast-food restaurants. But some students, instead of beginning by *evaluating* each of the two restaurants in order to define the problem, picked up on the words *compare and contrast* in the teacher's assignment. They apparently recalled models of compare-and-contrast essays that they had been writing for years, so they wrote about the restaurants' differences and similarities—without ever proposing the results of an evaluation and saying which restaurant has a better layout and work design.

Students also used a "stretch thesis strategy"; that is, they constructed a thesis that was broad enough to embrace all the ideas that they had found in their research sources. If a business writer is determined to use a thesis statement, it will often have to be stretched to accommodate the variety of points made—several different recommendations, for example. Imagine a thesis like this:

> In order to increase sales of ProWriter, we will develop new marketing strategies, including new radio advertisements for the Midwest division and a brochure targeting upper-income consumers in the South; a sales incentive program, including additional rebates for first-time buyers and a free options package; a national ad campaign, with follow-up, regionally specific TV ads, . . . [and so on through a long list of recommendations].

The thesis could bloat up to include the whole report. On the other hand, if you must have a thesis statement, and you believe that it should be concise, you might need to write a thesis so general and obvious that it is a waste of time:

> In order to increase sales of ProWriter, we will try several things.

You can see why business writers usually do not begin with a thesis statement. Yet many of the management students imported the model of a thesis-driven paper to their business writing: 36 percent, at some point in their writing process, used the term *thesis,* although their teacher never did. Some of those students retained the notion that a thesis is a starting point for writing, so they automatically chose a thesis without defining and analyzing the problem and then listed whatever reasons they could think of for believing the thesis.

Now let's look at an example of an effective process model in business writing. Students in a marketing class at my school find local businesses for whom they write, with partial funding from the Small Business Administration, marketing reports. Consider one such report, written for an art supplies store (the names of the store and its owner have been changed to protect the confidentiality of the report). Here's the first paragraph:

> Strokes Art Store is a small art supply store located in the downtown district of Hammond. It is suffering from a lack of consumer awareness in the immediate area. The owner, Tom Henson, wants to raise public awareness of his store. He proposes to do this by promoting the children's art supplies and framing parts of his business.

The authors begin by defining the **problem** ("a lack of consumer awareness in the immediate area") and the **solutions** to the problem ("raise public awareness" by "promoting the children's art supplies and framing parts of his business"). The problem dictates a focus on raising public awareness, and the owner (understanding the conditions of his time and resources) chooses to focus on two specific areas—children's art supplies and framing—to solve his store's problem. The writers must therefore focus the report on the problem and the solutions—the beginning and ending points of a process model of business writing.

Look next at the marketing report's table of contents. As you write a business report, your thinking and drafting will not follow a neat order. You may, early in the process, jump to tentative solutions or, late in the process, go back to reassess the problem. Your report, however, must take the reader through the steps that will, finally, make your recommendations convincing. The five main sections of this marketing report attempt to do that.

I. *Situation Analysis* includes subsections on the industry, company, product, market, competition, distribution strategies, pricing policies, promotional strategies, environmental factors, corporate objectives and strategies, and location.
II. *Research Results* covers both a research plan and research analysis.
III. *Alternative Solutions* sets out five solutions not included with the Recommendations.
IV. *Recommendations* makes and explains five recommendations.
V. *Implementation* proposes five strategies.
VI. *Appendices* includes the data collected during research.

The Situation Analysis is an extended analysis of the problem and the contexts (e.g., competition and location) for understanding the problem. Research Results continues the analysis of the problem by collecting and analyzing information (placing the detailed data in the Appendices allows the writers to keep a sharper focus on the main results of the research). Alternate Solutions help to convince the reader that the writers are not simply offering the first solutions that come to mind. Recommendations and Implementation then focus the reader's attention on what to do and how to do it—on decisions and actions.

You see how crisply this report format focuses on the problem and solutions. But the reader does not even have to read the whole report to discover the focal points because the report begins with a two-page Executive Summary that briefly outlines the problem, research, recommendations, and implementation strategies. This Executive Summary shows how the process of defining problems and choosing actions to solve them determines what to focus on in business writing.

Exercise 2.10 Defining Problems and Topics in Business

Many business reports begin by identifying a problem. In order to do that, the writers will conduct a Situation Analysis that typically consists of subsections on the company being studied (its financial situation, goals, location, facilities, policies and strategies, and so on) and the context in which the business finds itself (the larger financial market, competition, environmental factors, social and cultural factors, industry trends, and so on).

Select a local business and conduct an informal Situation Analysis of it (you should both observe the business and talk to managers and employees). Use your analysis to identify a problem that would be the focus of a report that you might write.

Establishing Focus

In this section we consider the form and location for establishing the focus in business writing. If the focus is not created in a thesis statement at the end of the introduction, how and where should it be articulated?

Form For many of the great variety of documents written in the business world, a thesis statement would be inappropriate. Composition teachers will typically say that a thesis statement is a clear affirmation of your conclusion, of what you believe to be most essentially true about your subject; it is not a question. But a business letter or memo may have a question for its main point. Asking a question in business is effectively the same as making a request, so a manager could write a memo that says only

> What are the results of the marketing test we conducted in Seattle last month?
>
> *or* Would you please send me the results of the marketing test we conducted in Seattle last month?

The point is that the manager needs the information, and even if the memo is longer than these examples because the writer goes into detail about what specific results he or she wants or how to go about sending them, the main point is still "Get me the information."

Similarly, a directive communicated to employees in a memo does not have the same form as a thesis statement. Instead, it could look like any of the following:

> On Saturday, March 27, we will meet in the conference room to discuss first-quarter earnings reports.
>
> Employees are reminded to wear appropriate formal attire for our grand opening sale.
>
> Beginning Monday, safety helmets will be worn by all employees entering the machine shop.

A business report could include a sentence that *looks* like a thesis statement:

> Production in the paint division fell 14 percent during the second quarter.

But if the report is more than a preliminary study, its main point would probably be its recommendations for improving production, which might be presented as a bulleted list of several suggestions.

The preceding examples also show us how the form in which the focus is established depends on the relationship between writer and audience. If you were a midlevel employee and you wanted a certain set of information, you might write a direct request to a subordinate:

> Send statistics on the new Merdy account by tomorrow morning.

But making the same request of a superior requires a different form:

> My sales team would like to study the statistics on the new Merdy account before our strategy session next Tuesday. We would be grateful if you could ask your secretary to send those to us.

Both pieces convey the same basic purpose and main point, but the way in which the audience's attention is focused on the points differs. In the second example the focus shifts a bit from what it is in the first example: The first makes the simple point that the writer wants the statistics; the second focuses on the reasons for wanting the statistics. The subordinate who is the audience of the first example will supply the information as directed; the superior who is the audience of the second needs to be given a reason to supply the information as requested.

The primary consideration when deciding how to focus attention on the main point is the readers' interests, the audience's *needs.* Every time business writers begin a writing task, they must determine their audience's interests and needs and establish focus on the main point accordingly. Even the form of the directives to subordinates implicitly recognizes the subordinates' need to please their superiors. More often, however, a business writer will recognize a reader's need for recommendations or information that will facilitate a decision. The writer thus selects a form that will focus attention on whatever the reader requires to make a decision.

Location In almost every case, business writers bring the main idea into focus very quickly—often in the first sentence. Remember that an introduction should begin only as far away from the main point as is necessary to find common ground between writer and reader. In many kinds of business writing, the writer and reader know one another, may even work together.

Consequently, the writer doesn't need generalities to establish common ground and can instead begin with the main point. Look again at a few of the examples cited earlier:

> Would you please send me the results of the marketing test we conducted in Seattle last month?
>
> Beginning Monday, safety helmets will be worn by all employees entering the machine shop.
>
> Production in the paint division fell 14 percent during the second quarter.

Each of these is the opening sentence of a report. In each case, the audience knows exactly what the writer is talking about. And even in longer documents, such as the marketing report we looked at earlier, an Executive Summary (or some similar device) concisely establishes the focus at the beginning of the report. When both writer and reader know the necessary background, the writer can immediately focus on the main point.

When a businessperson is writing to some unknown audience, it rarely takes him or her longer than a paragraph to establish necessary background. Readers of business documents do not wait patiently to see how the writer proposes to satisfy their needs.

If a business writer expects a negative emotional response from the reader, he or she may delay focusing on the main point until late in a piece of writing. Such "bad-news" messages often begin with a positive tone, focus on reasons for the bad news, and then end with the negative message that is the real point. Not everyone agrees that a bad-news message should be structured in this way, but they often are, and you may have reason (like a boss who insists on it) to use this structure in your career.

Generally, however, you should follow the practice of focusing on the main point as sharply and quickly as possible.

Exercise 2.11 Establishing Focus in Business

Study the following samples of Executive Summaries written by students. How do they establish a focus for the reports they summarize? Explain the techniques that each uses. Select a summary that seems especially good and explain the reasons for its success.

> EXECUTIVE SUMMARY
>
> *History*
>
> Strokes Art Store is a small art supply store located in the downtown district of Hammond. It is suffering from a lack of consumer awareness

in the immediate area. The owner, Tom Henson, wants to raise public awareness of his store. He proposes to do this is by promoting the children's art supplies and the framing parts of his business.

Research

After completing a convenient phone survey of people in the Hammond area, pertinent information regarding the attitudes of consumers in the areas was discovered. The first discovery was that Strokes's biggest local competitor is Loga's Office Outfitters and that those who primarily shop at Loga's are those whose annual income exceeds $20,000. We also discovered that those who purchase the largest quantity of children's art supplies and have the most framing done are those whose annual income exceeds $20,000 as well.

Conclusion

After reviewing the data gathered and analyzing the current situation, five recommendations for how Mr. Henson can raise customer awareness of his business are proposed. They focus primarily on children's art supplies and the custom framing service.

The *first recommendation* is to change the store layout. By changing the layout it was determined that Strokes could better utilize space and make the children's art supplies and custom framing more accessible and visible to the customer.

The *second recommendation* for Strokes is to add music to the store. Music relaxes customers and may lengthen their visit, thus increasing the amount of possible sales.

The *third recommendation* is for Strokes to put up the awning on the back of the store. This will allow for traffic that is passing on 7th Street to see the store, increasing the awareness of the store.

The *fourth recommendation* is for Strokes to plan special promotions in advance that correspond with advertisements. If promotions are carefully planned and executed, the customer can plan ahead and sales will produce more profits.

The *fifth recommendation* for Strokes is to offer a special promotion for kids called Kids Club. By having a special promotion for kids, Strokes will be able to target that market, and the children's art supply will get more recognition.

Implementation

In order to implement the recommendations effectively, time and patience are necessary. Attention must be paid to detail and shortcuts will not produce the desired results. The following are the implementations suggested in this report:

First, to change the layout of the store will take time and only a small amount of money to add displays.

Second, to add music will cost only the amount of purchasing a radio of some sort.

Third, to hang the awning in back of the store will take a few hours and can be done without added cost. The awning does not have a cost factor because Mr. Henson already purchased it.

Fourth, to implement the special promotions along with advertisements will involve some planning in advance. The cost for this will include the price of the advertisements chosen.

Finally, the Kids Club will include a small cost to set up the promotional cards and organized planning as to what the specials will offer.

By following these recommendations and implementations, Strokes will be able to raise the customer awareness in the area, which will lead to an increase in sales.

EXECUTIVE SUMMARY

Realizing the importance of its recent downturn in business, Wettinga Travel Corp. sought to address the problem in communications and public relations.

Wettinga Travel Corp.'s ability to communicate is evident in its business and community success; however, it wishes to improve its effectiveness. The problem to be addressed was, simply put, to design communications strategies that might combat and perhaps prevent client dropout.

This report is a step-by-step analysis of our work toward solving that problem. Hard Consulting Group, and its executive members, determined the reasons for client dropout and potential for further dropout. We then proceeded to offer possible solutions, both practical and alternative, all of which may be used. However, we recommended only a few of these in the beginning stages. Those recommendations we made will be most effective immediately and certainly fairly easy and noncostly to implement.

In effect, our recommendations are as follows:

- Improve customer services through phone calls, meetings, and client mailings, which will also improve customer relations. In turn, employee relations should be addressed so that they will be most effective.
- Reconsider prices in order to appeal to more customers.
- Finally, to assist the customer with any help in airline travel, it is necessary that the agency serve as a mediator between clients and

airlines when it comes to complaints about baggage, refunds, and passenger bumping.

For future communications needs, a media kit should be constructed, including reference materials for updating knowledge of airline statistics in the problem areas. We recommend a software program (One Step Ahead) for continuous price-checking.

These recommendations, as we implement them for you, are meant to improve the perception of your company and drastically alter the way you do business and with whom you do it.

EXECUTIVE SUMMARY

The committee to restructure customer service at Hadley's Department Store has researched thoroughly our assignment and has decided upon four main recommendations to be implemented:

- Customer greeting
- Fitting rooms
- Close of sale
- Customer follow-up

We found these to be the most cost efficient and beneficial tactics for our store. Through implementing these recommendations we will develop customer satisfaction and loyalty, thus increasing our profits in the long run.

Our report is an in-depth discussion of our research, our alternatives, our recommendations, and finally, our costs. Our research survey gave us many ideas, but some were too costly and some were not in high enough demand. For these reasons we eliminated some ideas and came up with our final plan.

Maintaining Focus

Because business writers usually establish the focus early, they have to use tools to keep the main point or points in the foreground and in the action—to keep the readers' attention sharply focused. We know of several features of written texts that grab attention; among them are *key terms*, *repeated words or ideas*, *concrete images*, and *directional signals* (devices that show connections between parts and the direction of a piece of writing—I'll give examples later).

Business writing uses many different techniques to put these attention-getting features to work. All the techniques that we will now discuss—format and graphics, organization, and transitions—will be discussed again in later chapters. I mention this because you should realize that *everything* in a written text can help to keep a reader's attention focused.

Maintaining Focus with Visual Features Business writing looks different from the kinds of essays most students write in first-year composition courses, and the visual formats that business writers use maintain focus. Visual features such as boldfaced headings, key words in large print, extra blank space surrounding key words, and bulleted lists create concrete images that demand a reader's attention; they can therefore focus that attention. Look at the first page of a marketing report:

GMI

Both Hielson and Templeton Market Research findings show that ClearTalk advertising benefits advertisers and retailers alike. Initial independent research conclusively shows that ClearTalk:

- *generates awareness*
- *moves product*
- *improves the shopping experience*
- *provides advertising value*

At the top of every page in the document is the company logo. It focuses attention on the company's identity. The list of four bulleted items on this first page forms the basis for the four main sections of the document, and at the beginning of each of those four sections is a statement—in large, boldface type—that reiterates the wording on the first page. For example,

ClearTalk Generates Strong Consumer Awareness

is the heading on the second page. These visual features take advantage of key terms, repetition, and concrete images to maintain focus.

Maintaining Focus through Structure The overall organizational pattern of business documents keeps readers focused on the problem-to-action pattern typical of business writing. It is the same basic organization that we saw in the report written for the art supplies store:

I. Situation Analysis
II. Research Results
III. Alternative Solutions
IV. Recommendations
V. Implementation

The report structure keeps our attention on the process of finding, analyzing, and solving the problem.

Maintaining Focus with Transitional Words It is one thing to establish the focus early in a document, but the reader must be able to follow it through to the end. Transitional words, signaling the direction of a writer's thought (a list appears in Chapter 7, page 204), also help to maintain focus. Read the following letter, in which the directional signals are highlighted in italics.

> Tom:
>
> We have discovered an unexplained drop in production last month, *so* I need you to send me the time reports for the people in your division.
>
> The number of hours of paid employment did not go down last month, *but* productivity did. *Furthermore,* we have been hearing rumors that several employees are taking turns punching each other's time cards.
>
> *However,* we have not been able to prove any such misconduct. We hope that we will be able to discover some patterns in the time reports that will help us to prove misconduct if there has been any and to determine who are the culprits.
>
> *Therefore,* please send last month's time reports for your division to my secretary by next Monday, 7/28/96.

The directional signals keep us in touch with the concise statement of purpose in the first paragraph and take us to additional information about the problem ("Furthermore"—¶2), to the complication ("However"—¶3), and finally back to the required action ("Therefore"—¶4).

The short paragraphs of this letter are typical of business letters and enhance the focus on the main points of the paragraphs and thus of the whole letter.

To summarize: Business writing tasks usually grow out of practical situations; the purpose for writing is dictated by a specific situation. Therefore, finding a focus should be relatively easy. However, when the point is obvious to you, you may become complacent and forget to make sure that it continues to be obvious to your reader.

Exercise 2.12 Maintaining Focus in Business

Samples of professional business writing arrive at your doorstep almost every day. Select a business letter, a sales or promotional brochure, or some other piece of business writing that you receive in the mail. If you prefer, you could seek out a particular business (perhaps one where a friend or relative works) and ask them for one of their company's brochures or letters. Explain the document's strategies for maintaining focus. Are there any strategies used that are different from those you use in the papers you write for your college classes? How could you better maintain the focus of the document?

WORKSHOP 4

Focus in Business

The student paper that we will use for all of the business workshops (Workshops 4, 8, 9, and 16) was written for a marketing course. The assignment is long, and it does much to determine the focus of the paper. Item IV in the assignment, for example, designates the objective of the report. However, Joe, the author, still faced some questions about focus. Reproduced here are the assignment, Joe's questions about focus, and the final draft of Joe's report. Questions for you to answer appear at the end of the workshop.

THE ASSIGNMENT

> ***Marketing Audit***
>
> *Assume you are a consultant.* You have been hired by a local tennis facility (the one you choose) to help it decide who to target and how to promote a summer tennis league (the client's idea) in order to attract new members to the facility. Primary research was collected and must be analyzed. Your report must be 5–7 pages in length and must look professional. Write in third person.
>
> I. Executive Summary (write last; a one-paragraph summary for "outsiders")
> II. Introduction
>   A. Name and address of tennis club/health facility chosen
>   B. Outline of paper (in 2–3 sentences)
> III. Initial Situation Analysis
>   A. Methodology (please only observe activity—*do not interview anyone*—at *two* health fitness/tennis club facilities and then try to answer the following questions for one of them based only on what you observed)
>   B. External environment (competitive, legal, technological, economic, social-cultural influences where appropriate)

C. Internal environment
    1. Organizational mission, objective, strategy
    2. Relevant market, cash cows, dogs, etc.
    3. S.W.O.T. facing firm regarding relevant market; what is firm's distinctive competency?

D. Product markets
    1. Marketing objective for broad product category
    2. What is firm's competitive advantage?
    3. Target market for broad product category (*Note:* Assume at this time there is no marketing strategy, so omit it here)
        a. Occupant: Who is it? How is it segmented? *Create a segmentation table.* How large is target market? How fast is it growing? What is firm's share?
        b. Object: What is market buying? What benefits? What attributes? How could product be classified according to shopping behavior?
        c. Occasion: When is market buying? Is buying consistent (seasonal)?
        d. Organization: Who is involved in buying? What other customers?
        e. Operation: How is the market buying? Is the customer high/low involved? Is decision a think or a feel? *Describe the entire adoption process.* What social-cultural-personal influences are there?
        f. Objective: Why is the market buying? What needs dominate (think Maslow or other models)?
        g. Other: Who else is competing for this market? *Create a multi-attribute table* (attribute importance weights and how firm and competitors rate on each attribute as seen by the customer)

IV. Objective of Study (The tennis facility wants to determine who best to target and how to promote the introduction of a tennis league.)

V. Methodology Employed to Gather Additional Data (Utilize the survey data given you regarding a tennis league.)

VI. Results from Methodology Employed
    A. general description of the data (means and standard deviations, medians, modes where appropriate)
    B. Relevant, competent, and material cross tabulations
    C. Significant differences between groups if found

VII. Conclusions and Recommendations
    A. Problem(s) or opportunity(ies), i.e., What is the best segment to target (given this segment), and what media should be

    used? Which growth strategy should the tennis club pursue with the tennis league?
  - B. Critical factors (e.g., regarding the customer, competition, and client)
  - C. Alternate solutions
  - D. Recommended solution
  - E. Additional comments (discuss implementation strategy)
- VIII. Appendices
  - A. Data collection instrument(s)
  - B. Tables
  - C. Other relevant data

JOE'S QUESTIONS ABOUT FOCUS

Joe first assumed that the lengthy assignment would eliminate focus problems, but, as he explains below, several issues did arise.

- Because an outline was provided, focus seemed an unnecessary issue at the outset—I thought I could just follow the prescription—*but*
- I had to work with a predetermined length (5–7 pages), so I had to pay some attention to *which* section got the most attention (in terms of length). *Balance* became an issue. (Ultimately my longest section was the initial situation analysis. He asked for a lot for this section, so I had to make it the longest. But I felt I should have been able to spend more time in my research/conclusion sections (this *really was* a big deal to me, though it seems trivial now. At this point I addressed overall focus again.)
- The *purpose* of this paper is/was to communicate to my "boss" my recommendations concerning a selected target market for a new product (tennis league). *My* thoughts were that I should focus on this all throughout the paper—and that the situation analysis was just a necessary "fluff" section to make the thing look professional. So what did the prescribed balance mean now? (Apparently the initial analysis played as much a role in the conclusion as the research did—actually, I came to see it as *part* of the research. It may seem a simple lesson now, but I had to learn to connect all segments of this paper with my conclusion—this actually meant changing my conclusion. Originally, I based it solely on the research, but given the initial situation analysis, I had to change it. *Then* I felt everything was unified and my focus became completely clear.)

  1st conclusion: Based on *client desire* and *growth potential,* target *males.*

  Ultimate conclusion: Based on *environment,* target *younger* people.

JOE'S REPORT

Marketing Audit
The Georgia Schwartz, Jr. Memorial Tennis Club

EXECUTIVE SUMMARY

1 The Georgia Schwartz, Jr. Memorial Tennis Club of Oakton, Indiana, is a long-standing tennis institution of first rank in the community. Facing a changing community profile with respect to age, the club wishes to implement a new concept: the recreational tennis league. Based on the results of a drop-off survey administered at several sporting goods stores, it is apparent that this tennis club should target a new market (younger consumers) with its new product (the tennis league) in order to keep up with the changing environment.

INTRODUCTION

Case

The tennis facility that serves as the basis for this audit is

The Georgia Schwartz, Jr. Memorial Tennis Club
201 Burham Ave.
Oakton, Indiana

Objective

The purpose of this marketing audit is twofold:

- to analyze the tennis club in terms of its apparent target market, and to determine its current position in the overall Burlington area tennis club environment; and
- to research which segment of the local market would be best to target in the promotion of a tennis league.

INITIAL SITUATION ANALYSIS

Methodology

For the purpose of analysis, the use of observation (and subsequent inference) was employed. Observed were the physical characteristics of Schwartz's patrons' characteristics and its community reputation.

External Environment

5 Schwartz's is one among several tennis clubs in the south suburbs of Burlington. Although none of these other clubs is within a mile radius of its setting in the heart of Oakton, Schwartz's must compete with tennis clubs of the neighboring suburbs, which can be conveniently accessed by the major roads. It is a perfectly competitive environment.

Economically, the city of Burlington is considered an area of high potential for businesses. There seems to be economic growth both downtown and in the suburbs, as buildings go up and businesses boom.

Unemployment is also on the decline in the Mimi Valley. With its location in the affluent suburb of Oakton, Schwartz's is nestled in among the lavish estates of Burlington's old-money families, which contributes to the steadiness of customer buying power and economic opportunity.

On the sociocultural level, Schwartz's has a very definite niche. Both the surrounding communities and the patrons of the tennis facility are by a high majority Caucasian. In the estates of Oakton, most of those Caucasians are of the over-fifty generation, but in the areas about a mile away from the club, there is a younger, family set of residents in the majority. In fact, this family class is growing in the community, as the grade schools are at record enrollment. The city of Burlington is so highly segregated, that the nearest community of minorities is too far away to be in Schwartz's market.

Internal Environment

Schwartz's was named after an Oakton legend of the early part of this century. From its conception, the facility has been dedicated to providing the highest quality tennis facilities to area residents. Their primary strategy for fulfilling this aim is to maintain a club of the highest quality, with an all-too-accommodating staff and the most aesthetically pleasing grounds in the southern part of Burlington.

The club's relevant market is that of the tennis facility. In Oakton, as it is considered THE place to play tennis, it has a very high market share, but because of its exclusivity and high membership fees, it experiences very little market growth. Thus, Schwartz's is a prime example of a cash cow in the south Burlington tennis club market.

10 The strengths of this firm in the tennis club market are that it alone has the history of a Wimbledon tennis athlete and the old-money patronage of Oakton's elite. This champagne image works positively for the club by attracting more and more of the selective upper crust who would refuse to play tennis at a newer facility. The distinctive competency of Schwartz's is its ability to maintain a country club atmosphere in order to back up its prestigious name. This can also be a weakness, as it may turn away many potential customers who feel intimidated by the tradition and high-class environment. With the growth of the family set in Oakton, Schwartz's may run into trouble, as the younger generation may not be lured in by the Schwartz name.

Product Market

To this point, Schwartz's has relied on the prestige associated with its name in order to maintain its clientele. Its marketing objective to attract and maintain an exclusive clientele is based solely on this word-of-mouth reputation. It sponsors no tournaments, advertises in no publications, and maintains a private location with a barely noticeable sign.

The firm's competitive advantage is that it has a monopoly on tradition and knows how to use it to attract patrons. None of the other tennis clubs in the area, though they may be expensive and well maintained, can match Schwartz's in its history and class.

The target market for this tennis club is older, affluent tennis players:

Occupant: Based on Schwartz's community reputation, it is the older, wealthy class who is using this facility. (See Appendix A: Segmentation Table of Tennis Club Market.) The target market of the older, wealthy class is about 30 percent of the total market, as only the wealthy can afford to pay the high fees, and there are more younger tennis players than older ones. This segment does not appear to be growing quickly. In Oakton, Georgia Schwartz's share would appear to be about 80 percent of this target market.

Object: The market is purchasing the right to play tennis on the beautiful courts as often as they wish. Schwartz's definitely treats this as a specialty product. Only ONE facility can boast of heritage and fame, no matter how obscure the namesake may be. This product probably reached the maturity stage over fifty years ago, but it has seen little decline in membership over the years and appears to be operating steadily.

Occasion: The product is used only when the weather permits; thus, most memberships are purchased in the warmer months. As the courts are all outdoors, the tennis club must close in the winter, and autumn and early spring users aren't as numerous as summer ones. Still, memberships are annual in fees.

Organization: Although the principal buyer is almost always also the user and the ultimate decider, his or her decision is highly influenced and often initiated by peers who already belong to the club. Word-of-mouth advertising is key to Schwartz's success.

Operation: Although the customer must be generally high-involved before making such an expensive purchase that involves a commitment to a club, the decision itself is mostly a feel. Consumers generally patronize prestigious places as a result of their emotional need for status. The adoption process is therefore that of Affective-Cognitive-Conative (feel, think, do). The social influences are, of course, the elite neighbors who also belong and the status associated with belonging.

Objective: In Schwartz's case, the market is buying because of the social need for status and group membership. If they merely wanted to play tennis, they could go to the Oakton Community Center, but because the upper echelon of society play at Schwartz's, they are willing to pay to play.

Other: Also competing for this market is the Fox Run Racquet Club of Thomasville, only a few miles away from Schwartz's. Fox Run also maintains excellent facilities, but generally attracts the younger affluent class. (See Appendix B: Multi-Attribute Table of Target Segment.) Schwartz's multi-attribute score is 8.4 to Fox Run's 7.45, explaining why it is most often the choice of this target market.

OBJECTIVE OF STUDY

The Georgia Schwartz, Jr. Memorial Tennis Club wants to determine who best to target and how to promote the introduction of a tennis league.

METHODOLOGY EMPLOYED TO GATHER ADDITIONAL DATA

15 The primary data used for market research in this descriptive study are the result of a drop-off survey administered at several Burlington area sporting goods stores (five stores total: three T.C. Sporting Goods and two Dunby's stores in the Burlington area).

Shoppers were asked to make checkmarks for 20 questions, the first 8 being parametric responses ranking attributes of a potential league and the remaining 12, nonparametric questions of identity and preference. Motivation for filling out the survey came in the form of a ten-dollar gift certificate at the given store, to be selected from a random drawing. There were 78 surveys completed and returned for use in this study.

RESULTS FROM METHODOLOGY EMPLOYED

General Description of Data

Of the first eight questions (attribute ranking of importance), the overall means are relatively small in range, with most attributes falling between 2 and 4 on the importance continuum, as should be expected.

According to the data, the attribute which reflects the highest average importance is the time-during-the-week variable (mean = 1.949) followed closely by the time-of-day variable (mean = 1.872). Apparently the respondents are most concerned about when the league plans to meet each week. On the other end of the scale is the number-of-teams attribute (mean = 3.615), followed closely by celebrity endorsements (mean = 3.447). Among these data, none of the standard deviations appear relatively high or low (the highest, 1.202, representing the cost variable). Thus, respondents as a whole seem more time oriented and less likely to be persuaded by celebrity advertising or variety of groups.

The remaining data testify many noteworthy characteristics, among which are the following:

- Weekday leagues are generally preferred to weekend leagues, and early evening is the best time to schedule leagues to meet.
- The respondents are approximately evenly divided between males and females.
- In general, the older the age group, the fewer the respondents. The group most represented is the 18–25 set.

- The majority of the respondents are not current members of a tennis club and play tennis *no more than* 1–2 times per month.

Relevant Cross Tabulations

20 Of all available cross tabulations with respect to age, gender, and frequency of tennis playing, only those of statistical significance are used to aid the determining of the ideal target segment for Schwartz's. Those cross tabulations wherein the chi-square is significantly great within its degree of freedom (nonparametric data), and those whose *p*-values are less than .05 (parametric data), are considered relevant for comparison and contrast.

This being the case, significant data may be studied with respect to

Gender and
- frequency of tennis playing
- first section read in newspaper
- club membership
- importance of time of day

Age and
- number of tennis-playing acquaintances
- radio station listened to most frequently
- importance of league length
- importance of league cost
- importance of celebrity endorsement
- importance of time of day
- importance of time of week

Frequency of tennis playing and
- time of day
- importance of time of day

Significant Differences Among Groups

The groups differ in a manner that may be generalized as follows:

Gender:	*Males* play tennis more often, read the sports page first, are nonmembers of clubs, and place importance on the time of day a league meets. *Females* play tennis less often, read the front page first, are club members, and place little importance on the time of day.
Age:	*Younger groups* (18–25; 26–33) know more tennis players, listen to 104.5FM, place little importance on celebrity endorsements and greater importance on league length, cost, and schedule time. *Older groups* (34–42; 43+) tend to know fewer tennis players, listen to 105.7FM, place greater importance on celebrity endorsements and less on league length, cost, and schedule time.

Frequency:. *Infrequent players* (0; 1–2 times per month) prefer to play in the early evening but place less importance on time of day. *Frequent players* (5–6; 7 times per month) prefer to play in the morning and place a greater importance on the time of day.

CONCLUSIONS AND RECOMMENDATIONS

Problem

Using all the relevant data collected in this descriptive study, Schwartz's must determine the best market segment to target regarding a new tennis league. It must also create an appropriate message and decide on a media and growth strategy to use in promoting the league.

Critical Factors

In selecting a target segment:

- *Client desire.* Of the possible segments, which will be most likely to join and participate in a recreational league?
- *Growth potential.* Of the possible segments, which in contributing to league growth will also spur the growth of the club as a whole (in membership)?
- *Competitive environment.* Of the possible segments, which one will help stabilize Schwartz's against Fox Run and other clubs of similar income level by virtue of its support?

In selecting a growth strategy:

- *The market.* Is this segment a new target for the firm?
- *The product.* Is this product a new offering of the firm?

Alternate Solutions

I. Target the *male* segment of the Burlington/Oakton community. Oddly, even though males play tennis more often than females, they are not as abundant in membership. Thus, by targeting the males, Schwartz's can attract consumers with a stronger desire to play tennis and a greater growth potential in future memberships.

II. Target the *infrequent players* segment of the community. Although the current desire for playing tennis may be low, this target segment may contribute to the overall growth of Schwartz's as they place little importance on the time of day a league meets. This being the case, if the infrequent players can be attracted, they will be easier to schedule and the club can enjoy a fuller capacity throughout the business day.

Recommended Solution

The Georgia Schwartz, Jr. Memorial Tennis Club should target the segment of the community made up of the *younger* set (segment 18–25 years of age). Although the preceding solutions address the issues of client desire and growth potential, they fail to recognize the competitive environmental threat that Schwartz's faces.

Oakton is rapidly becoming a younger family town. Currently Schwartz's is clearly an older person's tennis facility. If it is to be able to experience stability and growth in the future, Schwartz's must appeal to the younger generation, who do not tend to value tradition and "name" (and though she died years ago, Georgia Schwartz is the celebrity endorsement which the club relies on). An added benefit of targeting the younger generation is that it includes both men, who tend to play, and women, who tend to become members. Also, as younger people know more tennis players, the growth potential is further enhanced.

Additional Comments

I. Message: Younger people aren't as interested in Ms. Schwartz's name, especially since her fame is associated with the early half of this century. Schwartz's must send out messages about its leagues which stress the issues that are important to younger consumers (as indicated in the study: cost and flexibility of league length and scheduling).

II. Media: Schwartz's has relied on its prestigious reputation to attract new members (friends of current members). In order to attract this new segment, it must approach the consumers through new media. Younger people tend to overwhelmingly prefer radio station 105.7FM, so if radio is the medium used, this station should be targeted. Regardless, any advertising (newspaper, television) will be a boost as currently there is none in use.

III. Strategy: The growth strategy employed should be that of concentric diversification. In this instance, both the product (a tennis league) and the market (the younger segment of the community) are new to the firm. Schwartz's must make the effort to promote this new product, closely related to the current product, to this new market.

APPENDICES

Appendix A: Segmentation Table of Tennis Club Market

	INCOME LEVEL	
Age	*High*	*Low*
Old	30%	5%
Young	40%	15%

Appendix B: Multi-attribute Table of Target Segment

Attribute	*Weight*	*Schwartz's*	*Fox Run*
Reputation	.40	10	6
Location	.25	8	8
Pleasant staff	.05	5	9
Court availability	.05	3	9
Maintenance	.25	8	9

Questions for You

Begin with the questions that form the core of this chapter: Is the focus appropriate? How does the paper establish focus? How does the paper maintain focus?

In his list of issues Joe mentions a concern about balance. To an extent, the amount of time you spend on the various parts of an essay will influence what readers perceive to be the focus of your attention. Does Joe achieve an appropriate balance? In other words, does he spend enough time on the focal points to keep your attention fixed on them?

In Joe's questions he says that the "purpose of this paper is/was to communicate to my 'boss' my recommendations." How successfully does the paper, overall, focus on this purpose? How successfully does the Executive Summary establish the focus? How well does its focus correspond to the focus of the Conclusions and Recommendations? Joe said that after he saw how closely connected the parts of his report were he shifted his conclusion from a recommendation to target males, based on client desire and growth potential, to a recommendation to target young people, based on environment. Is this shift in focus clear to you, and does it seem wise? Support your answers with specifics.

How would you improve the point of focus, the methods of establishing focus, or the methods of maintaining focus?

Having read all the materials in this workshop, are there any questions you have about focusing in business? If you had written Joe's paper, would you have any concerns to add to his list? If so, what would they be?

3

Adaptations: Focus

Social scientists, their own disciplines often transcending neat boundaries, often hybridize both topics to focus on and, therefore, techniques for establishing and maintaining focus. Sociologist Clifford Geertz argues in *Local Knowledge,* a 1983 book that is already a classic in the social sciences, that many social scientists have been moving away from the kinds of questions and methods that have typified the natural sciences and instead have been appropriating the questions and methods that have characterized the humanities. Social scientists, says Geertz, are "looking less for the sort of thing that connects planets and pendulums and more for the sort that connects chrysanthemums and swords" (19). Their emphasis has turned away from laws and toward interpretation.

The social sciences supply only the most obvious examples of what Geertz calls "blurred genres." He points out that the natural sciences and humanities are also changing. Some people have even argued that the most significant recent development in the natural sciences is the recognition of science's inability to discover the objective truth and science's consequent need to *interpret* nature's unknowable complexities. Businesspeople, of course, have always had to write on a wide variety of topics because of the varied audiences they address. In other words, writers in every discipline must adapt to special writing situations and ever-changing traditions.

REASONS FOR ADAPTING

You will find both practical and ideological reasons for adapting topics by cross-breeding disciplinary traditions. You may simply be assigned the job of studying the politics of scientific research (for example, how scientists go about pulling the strings that will get them grant money) or the science of anthropology (how anthropologists use the scientific method to draw and study hypotheses). Any time your audience spans more than one discipline, you may need to create a hybrid focus. Any time your audience includes people from different disciplines and of different interests, you may need to write about topics that merge traditions. Freeman Dyson, the renowned scientist, once gave a series of lectures titled "In Praise of Diversity." Knowing that the lectures would draw an audience with a wide range of interests, Dyson chose lecture topics that spanned science, philosophy, and politics. The broader your audience, the more likely that you will cross disciplinary traditions to give them something they can relate to.

You will also have reason to create topical hybrids when you, or the people who assign you a writing task, believe that "Reality Is Interdisciplinary." That is the title of a half-page comment in the *American Journal of Economics and Sociology:*

> . . . No valid solution to economic problems can be found solely using economic theory and quantitative aspects of social life. Analysis of societies obviously requires a synthesis of all the social sciences: political economics, law, sociology, history, geography, and political science. . . . (Allais 62)

This writer's work crosses disciplines within the social sciences, but other writers believe in even broader disciplinary crosses.

The emerging fields of "chaos" and "complexity" tout the interdisciplinary nature of those sciences as one of their most appealing features: They explain phenomena in domains ranging from the cosmos to natural landscapes to the human mind. One book in the field, M. Mitchell Waldrop's *Complexity: The Emerging Science at the Edge of Order and Chaos,* is the story of a group of people working together at the Santa Fe Institute. This group of natural scientists, social scientists, and businesspeople joined to develop the science of "complex adaptive systems." These people believe that they cannot understand the reality of nature, or society, or the human mind, or world economics through traditional disciplinary methods. Instead of the path toward isolated disciplinary specialization, which generally leads scholars to examine minute individual pieces of a system (for example, individual markets in an economy, individual cells in an organism, individual species in an ecology), complexity scholars look for the broad patterns that complex systems seem driven to create. And they look for similar patterns in different fields: the way an economy behaves like an organism or the brain behaves like a society.

Complexity science may even refocus the aim of science. The "essence of science," claims Waldrop, is not prediction but "comprehension and explanation." For centuries now the measure of good science is that it makes natural phenomena predictable, even if only statistically predictable (for example, there is a 33 percent chance that such and such an event will occur). These new complexity scientists, with their "whole new world view," begin to sound like literary critics. They read, interpret, and explain the complex and unpredictable books of nature and society: "Science is about the telling of stories—stories that explain what the world is like and how it came to be as it is" (Waldrop 318). But the stories of complexity scientists are full of the kind of ambiguity and uncertainty that scientists have long deplored. Complexity scientists enthusiastically say things like, "Here was something [a new idea] that smelled *right*. . . . It was biological evolution, intellectual evolution, cultural evolution, concepts combining and recombining and leaping over miles and generations—all wrapped together" (Waldrop 214).

I will not go so far as to argue that Waldrop's predictions are accurate; many scientists strongly disagree with him. My point is that major movements, led by powerful players (leadership of the Santa Fe Institute includes several Nobel laureates), are giving interdisciplinary studies an important role in our world. You are training for your careers at a time that may witness profound changes in the way we look at disciplines. Traditions could undergo significant change in a relatively short time. Milton F. Shore, the editor of the *American Journal of Orthopsychiatry* (a multidisciplinary and interprofessional journal devoted to preventive psychiatry for mental health in children and youth), wrote the following in a January 1993 editorial titled "Research: The Latest Magic Wand":

> Over the past decade, research [the quantitative studies traditional in the natural sciences] has become the darling of the mental health field. . . . [And] the luster acquired by research has discouraged authorship of other kinds. (4)

The trend troubles Shore, in part, because of an unwillingness "on the part of the research establishment to take risks or encourage innovative thinking" (4). He concludes with his belief that "this wave, too, will crest and break and research will return to its rightful place in the overall context of the mental health endeavor" (5).

The obvious lesson: Be prepared to adapt. Understanding the traditions of the discipline you enter may help to equip you with the ability to cross traditions, and a knack for creating effective adaptations may mark the successful people of your generation. In the last chapter of *Complexity,* Waldrop quotes Brian Arthur (one of the founding economists of the Santa Fe Institute):

> So the question is how you maneuver in a world like that [a world of complexity]. And the answer is that you want to keep as many options open as possible. (333)

That's the main point of these "Adaptations" chapters and of this whole book: Don't look for *the* right way to write. The conditions of each writing situation are too complex for that, so prepare yourself by multiplying your options and enabling yourself—by first understanding the traditional approaches—to create new options for each new situation.

EXAMPLES OF ADAPTATIONS

Many journals in addition to the *American Journal of Orthopsychiatry* publish interdisciplinary studies. A few examples: *Configurations: A Journal of Literature, Science, and Technology;* the *Journal of Psychology and Theology;* the *Journal of Interdisciplinary History;* and *Adolescence: An International Quarterly Devoted to the Physiological, Psychological, Psychiatric, Sociological, and Educational Aspects of the Second Decade of Human Life* (crossing traditions can become a wordy business).

Sample articles from some of these publications show both hybridized focal ideas and techniques for establishing and maintaining focus. An essay in the *American Journal of Orthopsychiatry* ("Growing Up with a Psychotic Mother: A Retrospective Study," 1993) uses an Abstract that merges an opening narrative sentence

> Nine adults who had been reared by mothers diagnosed with psychosis reported on their childhood experiences.

with a scientific-sounding (note the passive-voice verbs) closing sentence:

> The resilience and coping strategies of the participants are examined, and implications for therapeutic interventions with such families are discussed. (Dunn 177)

The analysis of data does not take the form of tables and graphs showing quantified results. Although the author organizes the article in a modified IMRAD structure (Literature Review, Method, Results, and Discussion), she quotes and interprets passages from the participants' reports in ways that literary critics quote and discuss passages. And the conclusion of the article is a direction for specific action—something you might see in a business report.

In the *American Journal of Economics and Sociology* we find an essay with an unusual title: "Blood Sports and Cherry Pie: Some Economics of

Violence in the National Hockey League." The piece begins, like a literary essay, with a series of epigraphs that establish both the focus and tone:

> We've got to stamp out that kind of thing [fighting], or people are going to keep on buying tickets.
>
> Show business, we are in the entertainment business and that can never be ignored. We must put on a spectacle that will attract people.
>
> Violence is as American as apple pie. (Jones, Ferguson, and Stewart 63)

Although playful in tone, these epigraphs direct our attention toward the serious focus, as spelled out in the last sentence of the Abstract:

> The results confirm that there is a significant and positive relationship between aggregate measures of violence (total penalty minutes) and attendance for games played in both American and *Canadian cities;* and there is a significant positive relationship between the more extreme forms of violence (proxied by majors [major penalties] and misconducts) and attendance only in *American cities.* (63)

The authors keep up the playful style throughout but also present a mathematical model and quantified results to show that all hockey fans seem to like violence, but fans in the United States, and not in Canada, enjoy the more extreme forms of violence.

In the *American Quarterly* (a journal of history written for a nonspecialist audience) Carla Peterson enters the arenas of education, sociology, and history to focus on issues of multiculturalism in college classes ("*Borderlands* in the Classroom"). Her method is to use a "personal narrative of a classroom experience . . . [that] leads to a series of reflections" (295). She attempts this humanities-based technique in order to stake out a practical ground for teaching that relies neither on teaching a "single-stranded America" nor on multiculturalists' theories. Peterson, an African American, uses a nontraditional approach to argue for a position that stands between the currently accepted theoretical conventions.

Scholars in language and literature have used scientific methods in the enterprise of literary criticism. A school of criticism known as structuralism attempts, at least in its more extreme forms, to conduct a type of "scientific" study of the "laws" of literary texts. Tzvetan Todorov, in his *Introduction to Poetics,* writes,

> Poetics breaks down the symmetry . . . between interpretation and science in the field of literary studies. [It] aims at a knowledge of the general laws that preside over the birth of each work. (5–6)

This scientific approach to literature creates a humanities-style version of a scientific world view that believes in essential laws governing the universe, including human thought and experience.

You will need to know your teachers' preferences to learn whether or not they will grant you opportunities for adapting to special rhetorical situations with creative blends of disciplinary traditions. If you are allowed to do so, remember that the success of such adaptations depends on understanding the requirements of your writing task and the essential reasons for the traditions you manipulate.

CAUTIONS

The history of academic and professional writing is full of stories of people who were pushed into obscurity because they did not follow the unwritten rules of their disciplinary traditions. Don't despair; we also know of many people who used nontraditional approaches to work through obscurity to respectability and even fame. But we do not hear the stories of all those who have not found an audience for their nontraditional approaches, nor of those who had to choose new fields or professions because they challenged convention. The brash young Turk who crashes into the treasure trove of his field's established conventions and begins to smash things up is likely to get into trouble.

The trouble may not simply be a result of the establishment's desire to protect itself and its traditions. New ways of looking at the traditional focal topics in a field, to say nothing of whole new topics, are hard to understand. Humans rely on patterns of established knowledge, accepted models of reality, and new patterns and models are usually difficult to comprehend. When a complexity scientist says to the establishment, let's not focus on the laws that govern individual atoms or brain cells but rather on the laws describing patterns of interaction between atoms or neurons, even those people who think the new focus is a good idea may find it hard to follow. If you create an adaptation that expresses a new way of perceiving reality, be especially clear in explaining it and use whatever traditional language and models are necessary in order to be clear.

Any writer must recognize the risk that accompanies new focal ideas (or new methods of establishing and maintaining focus in writing) that cross traditions. Brian Arthur, quoted earlier, went through a period when he could not get his nontraditional ideas about economics published; and in academia an idea must be published to have any effect or credibility.

Further, it is hard to explain new categories until new models become accepted currency. The complexity scientists, until they clarify such models, are left to say things like, "It just *smells* right." People do not base their own research on ideas that are floating around the hallways smelling right.

The story of Barbara McClintock offers another cautionary example. During the 1930s and 1940s McClintock became a bright new talent in genetics. But in the early 1950s she made a discovery (what she called "transposition") that other scientists simply did not understand. In large part the problem was that the science of genetics had begun to pay closer and closer attention to the molecular level, looking for the simple laws that would explain the behavior and effects of genes. McClintock believed that geneticists should focus on the complexity of organisms rather than simple laws. But she could not create the simple models and metaphors that would allow people who understand reality in terms of simple models to comprehend her. Even colleagues who believed in her work admitted that the only way to get a feel for what she was doing was to spend long hours working with her and learning to see organisms the way she did. She sometimes used the kind of language that we hear from complexity scientists. In the book that tells McClintock's story, Evelyn Fox Keller's *A Feeling for the Organism,* Keller explains that fellow scientists could not understand McClintock because of "tacit assumptions," those deeply embedded and unchallenged beliefs about reality that kept them from having the "feel" that McClintock had.

In any case McClintock became an outsider, finding it difficult to get funding for research and to publish. According to Keller, even after geneticists realized that McClintock's ideas about transposition were right, she remained an outsider.

I suppose that we will always find unappreciated rebels, those people who refuse to play the game that they believe is somehow wrongheaded and who suffer for it—and who, in historical retrospect, may be judged right and visionary. But on a smaller scale, every writer will at some time rub up against tradition and will have to decide on the best way to be honest and yet be heard and understood.

I have not yet said anything about adapting techniques for establishing and maintaining focus. You can create problems doing that too—if you fail to understand your audience. If you were to try to publish, in a traditional literary journal, an essay that adapted both topics and techniques—using the technique of a scientific (IMRAD) organization to establish and maintain a focus on a scientific study of literature, you would likely find the editor skeptical . . . at best. You would be asking your audience to adjust to too many unfamiliar strategies at once.

On the other hand, you may be better able to convince someone who publishes (or teaches) science to accept a literary focus in a scientific paper if it were presented through traditional scientific techniques, or to convince someone who publishes or teaches literary criticism to accept an essay on the economics of narrative patterns if you were to use the conventional techniques of writing in literary studies.

As always, you must consider what you believe to be the best way to communicate to your audience, remembering that you cannot communicate if you violate convention so drastically that you cannot make yourself understood.

Finally, your years in college should be a time for learning the advantages and disadvantages of both conformity and rebellion. Adapting focus for an assignment in Psychology 101 probably won't make you feel visionary, but it could be fun, and it could teach you something about writing.

Exercise 3.1 Adapting the Focus

For this exercise you need a paper that takes an interdisciplinary approach. This could be a paper that you have already written or begun. For example, a paper on a subject like "The Creative Use of Metaphor in Physics" (the title of a paper I wrote as an undergraduate science major) or "The Psychology of Abuse: An Interpretation of Ibsen's *A Doll's House*" (the title of a paper one of my students wrote last semester) would be appropriate. Since I cannot be sure that you have such an essay, I am providing one for you to analyze. However, the questions that I ask about the sample essay below can easily be asked of your own paper.

The following essay appeared in a journal called *Configurations: A Journal of Literature, Science, and Technology,* which is cross disciplinary in its interests. The essay's title also indicates something out of the ordinary: "Science and Circus," by Julius Shreider.

> About fifteen years ago I had become, like many students of science, beset by a strong desire to describe science as a certain cultural phenomenon. This desire was probably connected with the realization, which had occurred among the students of science, that science is not only a specific type of cognizance of reality, but also a type of social mechanism. It was tempting indeed to determine, if not the definition of science in the literal sense, then at least the features distinguishing it from other socio-cultural phenomena. But how to discern such features? In my case, the prompting came from the idea of "representators," suggested by the Russian philosopher Mikhail Rozov—that is, I set about looking for the suitable "representator" of science among 1

other cultural phenomena. And it occurred to me that science could be juxtaposed with circus. The idea proved fruitful: rather quickly I discerned ten features common to both science and circus. Separately, these features could pertain to other fields of culture as well; but together, they rather clearly distinguished science and circus from all the rest.

In 1979 I announced the results of this juxtaposition at the Institute for the History of Science and Technology of the USSR Academy of Sciences (at the seminar of its "history of science and logic" section conducted by the late Bonifatii Mikhailovich Kedrov), and the report was met with sympathy and understanding—partly as an apt joke dismissing the somber gravity of science studies' "great depths," and partly as a fruitful heuristic train of thought. I undertook to write down the main points for a possible publication, but science in those days was reckoned among the sacred cows, and such a frivolous juxtaposition had touched by ricochet the Marxist ideology—the most scientific ideology in the world. It was not customary to make a travesty of "scientificality." Attempts to offer the text to various editorial boards had the sole result that not a single copy remained at the author's disposal.

Thus, this paper is a new attempt to draw an analogy between science and circus. Although some of the initially detected common features have been forgotten, some others have since been discerned. By and large, it seems that I have succeeded in retaining the main ideas of that bygone report. So let us try to consider science from the "circus viewpoint."

1. *The professionalism.* Both science and circus are the "arenas" of the activities of serious professionals—an amateur who has not mastered the respective training and has not become proficient in the technique of the pursuit, will have nothing to do there. It is necessary that a scientist possess professional skill in raising scientific problems, charting the maze of specialized literature, performing experiments. A nonprofessional rope-walker would fall from the rope. Let us note, by the way, that in such spheres as fine arts, poetry, politics, and military affairs, amateur performance/composition of music has been quite a noteworthy phenomenon.

2. *The "Hamburg score."* Within a healthy scientific community, it 5
is well known "who is worth what"—in terms of work accomplished, not of posts held and degrees obtained. Such internal appraisal of actors and achievements takes place in the circus medium as well. In both cases, the question is not a matter of taste, nor of evaluation within the limits of trends and schools, but rather has to do with a more or less objective ranking in accordance with the "Hamburg score." This term was introduced by Victor Shklovsky. According to a story that may well

have been of his own fabrication, circus wrestlers of former days were in the habit of getting together in Hamburg every year, in order to determine among themselves, in the absence of spectators, what place each of them would gain in actuality, not in the circus combats. Shklovsky intended to apply this notion to the evaluation of contemporary literature; it has not taken root there, though.

3. *The standard of difficulty.* The technical and ideational difficulty of a scientific result is estimated by the professional community as meticulously as is the difficulty of a circus act. This "index" is very significant in the final assessment of a result in both science and circus—whereas in poetry, fine arts, music, and even in chess, the matter of technical difficulty is a rather marginal one, virtuosity there being at best the prerequisite to mastery. (The important considerations of this issue are given in Genrikh G. Neigauz's book *Ob iskusstve fortepiannoi igry* [On the art of playing the piano], 5th edition [Moscow: Muzyka, 1988].) Of course, the problem of technical difficulty is essential in sport, which brings us to the next analogy.

4. *The occurrence of record achievements.* In the realm of circus there is the notion of a "record feat." It corresponds to such terms as a "superb" or "very powerful" result in the realm of science—that is, a result that requires the overcoming of difficulties that have proved beyond the capacities of other professionals. Such record achievements are usually connected with the solution of classical problems, to which numerous scientists have formerly bent their (unavailing) efforts. In mathematics, for example, one can refer to the famous problems of "three bodies" or of "continuum"; the latter has unexpectedly come to an end with the paradoxical proof of the impossibility of proving any of the competing hypotheses.

5. *The role of the unexpectedness of an achievement.* For a circus act, the unexpectedness of the shown effect is essential: the audience should not foresee what the conjurer will pull out of the "empty" form. This can be juxtaposed with the unexpectedness of certain scientific achievements—such as Max Planck's hypothesis that energy is quantized, which led to the solution of the classical problem of blackbody radiation; and the discovery of the spiral structure of the DNA molecule, of quasars in astronomy, of superconductivity under sufficiently high temperatures, and so on. Numerous instances of unexpected results can also be found in mathematics. As opposed to this, art basically rests upon aesthetic recognizability ("The reader waits for rhyme to 'roses' . . .").

6. *The sense of belonging to a special community.* The sense of community is pronounced both in the circus ("we the circus people") and in scientific quarters. It is manifested as the sense of a certain

distinction, and even marginality. The scientist lives in a special world, in which the prevalent disposition is to investigate, rather than to act—and automatically adopts a similar attitude toward the affairs of everyday life, not so much living by as investigating them, accepting not even the most evident things without thorough scrutiny.

7. *The marginal character of the community.* Traditionally, a com- 10
pany of circus actors was made up of exiles/tramps capable of doing something that others were not gifted for. In a similar vein, scientists trace their genealogy to sorcerers/alchemists possessed of some knowledge unique to them, and at the same time engaged in a not-quite meritorious pursuit. Notwithstanding that both professions have obtained a respectable social standing by now, the circus actor is still a kind of marginal figure amid the actors of their specialties, the one whom it is harder to conceive of as speaking from a rostrum or giving an interview. (Such Russian circus actors as Yurii Nikulin or Oleg Papov are rare exceptions; theirs, however, is the special vocation of clowns. Moreover, the former is a well-known film actor.) The contemporary societal respect for scientists is accompanied by an uneasy apprehension of their peculiar cast of mind—theoretically powerful, but imprudent when estimating practical consequences. Something not quite human, effective though it may be, looms large in the very manner of their thinking. The circus performer is also capable of actions that sometimes seem almost inhuman, which is expressed in such characteristic nicknames as the "gutta-percha boy," the "woman-spider." To lift weights, as athletes do, is humans' natural work; to catch weights is dangerous and unnatural. Thus circus differs from sports.

8. *The nonpolarized composition of the worlds of science and circus.* Normally humans live in a polarized world, between the poles of good and evil. And our assessment of this world is polarized, our intentions and reactions are oriented with regard to these poles. The orientation may be erroneous, discordant; nonetheless, it always is. In the world of science, in contrast, there are only facts, to which such evaluations as "good" or "bad," "better" or "worse" are inapplicable. "Twice two is four" is neither good nor bad. It is bad if a fact has turned out to be false or unreliable, but then it is no longer a fact of science. The circus performer does not express either good or evil, nor their collision. It is bad if a routine is unsuccessful, but such a failure only means the disqualification of the actor—and this is already not circus. That is why it is not possible for circus actors to express tragedy (with the exception of clowns, to whom I shall give special consideration below). Therefrom follows the next point.

9. *The cheerfulness of content.* Both the scientific result and the circus act express the success attained. Any failures of scientists and

misfortunes of circus actors whatsoever are "behind the scenes"—they are irrelevant to the profession. Scientific results as well as circus acts express neither the collisions of human characters nor one's struggle against destiny. Any scientific result is cheerful, as is any circus act. The element of melancholy is made manifest only by the agency of the "white clown," but the latter is an important exception.

10. *The victory over the laws of nature.* The natural scientist gains a victory over the laws of nature by gaining knowledge of them. In the realm of circus, the laws of nature are conquered by the actor's skill, even if the victory gained is but a temporary illusion. The circus ring is a model of the natural world in which the actors' art temporarily abrogates gravity, the conditions of equilibrium, the laws of conservation, etc. There is no struggle of personalities in the realm of circus, and therefore circus wrestling has shifted from the circus to the sports ring. (This suggestion was stated by Miron Petrovskii, a culturologist from Kiev.)

11. *The early entry into the profession.* Similar to circus, science demands, not only one's youth, but even one's childhood. An acrobat starts training when the body is young and lithe; in order to be a scientist, it is necessary to train one's mind and to start collecting a stock of knowledge from the earliest years, before natural human inclinations will have attracted one away from this goal. Professional work in both science and circus begins very early in one's life. However, inasmuch as athletes "grow younger and younger," and there have always been wunderkinds in music, this analogy exceeds the bound of the realms in question.

12. *The role of technical equipment.* It applies equally to science 15 and to circus that the quality of the apparatus used translates immediately into the quantity of novel achievements. As for the arts, new technical possibilities—such as the introduction of the saxophone to the symphonic orchestra, or the invention of cinematographic equipment—undergo a fairly long period of transformation from being perceived as a wonderful attraction (the circus term is not accidental here!) to becoming the means of "great art."

13. *The traditionalism.* Circus is perhaps the most traditional of all branches of human art, continuously feeding and enlivening old practices with the addition of new material. Similarly, science "feeds" not so much on the newly emerging requirements of practice as on the unfolding and cultivation of the classical ways of stating problems. In contrast, fine arts and technology are instigated by the conditions of everyday life. Thus, genuine poetry is far from being based on poetical tradition: "If you'd have known the trash the verses grow from, ignorant of whatever sense of shame . . ." (Anna Akhmatova).

In art, modernism aesthetizes those phenomena which formerly might not have been the objects of aesthetic appreciation, having been viewed as something low, vulgar, or taboo. Science and circus rather oppose this trend, maintaining the steadiness of their value criteria. Any story of attempt to renounce the strict logic of reasoning, to liberalize the criteria of conclusiveness, is met with strong enmity in the quarters of science, as threatening to undermine its practice. Similarly, in circus, newly emerging forms and means are squeezed into the traditional framework. Science and circus are the most paradigmatic cultural phenomena, in which capacity they may perhaps be compared only with religion.

14. *The reproducibility of results.* A scientific result obtained by one may in principle be reproduced by another, and such a reproduction by itself is a scientific result. The lack of reproducibility compromises the result. As a rule, circus acts are reproducible as well, and the expected repetition of a well-known attraction makes up the normal life of circus as a branch of art. Notwithstanding the endeavor to obtain new record results, traditionalism (paradigmaticity) is not perceived as something inferior in either science or circus—while in other branches of art, originality is commonly regarded as one of the highest values.

15. *The clown as methodologist.* The special role of the clown in circus art becomes more distinct when it is juxtaposed with the role of the methodologist in science. A clown must be able to do everything that other actors do, and at the same time to discern the meaning of those doings. Like a methodologist in science, a clown reflects upon others' actions. The issues for a clown are the circus acts; for a methodologist, the actions of scientists. Thus, each of them is preoccupied, not with the scientific or the circus subject proper, but with the destinies of people of science or circus. That is why a clown may be tragic; and a methodologist may reveal the scientist's tragedy, by ascertaining the limitations of the possibilities of the scientific method and even the existential deficiency of science—that is, by having obtained the negative result. Both of them, the clown and the methodologist, overstep the limits of their professional realms to enter the more humane world, on which there is the opposition of good and evil—and, therefore, value orientation occurs. In one of the acts, the famous clown Leonid Engibarov, while performing a one-hand-stand, would stand stock-still in this posture and demonstrate, by his facial and bodily expression, his own perplexity at the senselessness of what he had done; thereby the success of his masterly feat lost its circus unconditionality, having been put in philosophical doubt. Is it not true that philosophical doubt about the omnipotence of science gives the main impulse to the methodologist's work? Both the methodologist and the clown live in the polarized world,

in which there are good and evil, joy and grief. Each of them humanizes the corresponding phenomenon [sic], and this underscores the significance of the analogy drawn, notwithstanding its parodic genre. The device of "defamiliarization" is a potent cognitive means.

20 I cannot pass over in silence the fact that the idea of the juxtaposition outlined here emerged in the creative atmosphere of conversations on the subject of science studies between myself and Nataliya Ivanovna Kuznetsova—who successfully played the role of clown-methodologist in this case. The elaboration of this idea and the very creation of this text became possible thanks to her active stimulation.

—Translated by Anton Struchkov.

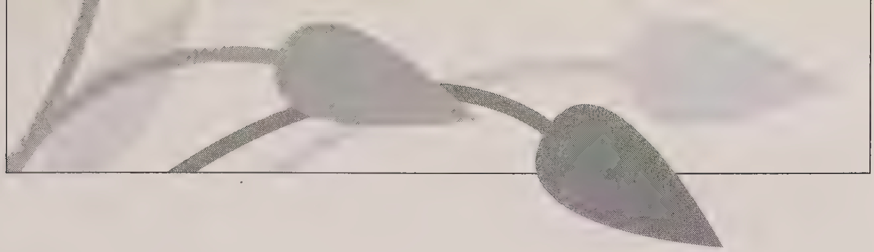
1. What is the focus of the essay? Try to express it in a single sentence.
2. How is the focus established and maintained?
3. What, if any, disciplinary conventions does the essay use to communicate its ideas? Does the essay use any unique hybrids of disciplinary conventions? If it does, in what ways are they effective or ineffective?
4. (If you used the essay printed above to answer questions 1–3) Find a recent paper that you wrote that does not take an interdisciplinary approach. Think of how you might hybridize its focus—how you might approach the topic from the perspective of a discipline other than that of the class for which the paper was written. Explain how you might have used a nontraditional technique for establishing or maintaining focus.

Part One Conclusion

I make students in my literature classes and business-writing classes select their own paper topics—and I cause a lot of pain in doing so. In class I explain most of the things that appear in Part One; still, many students remain uncertain. So a lot of them stop by my office to talk about focus.

The typical conversation begins with the student saying, in an exasperated tone, "I just don't know what you want!" So I say something goofy, such as "Neither do I; let's figure it out," and then we get busy. We have to work out what the student and I (the audience) think is worth learning and writing about, what the student and I think is possible to learn about, and what is possible for the student to explain clearly and convincingly within the given length and time limitations. I ask a lot of questions and offer some suggestions (I may sometimes tell a student, "No, don't go that way; that's an impossible question to answer about a novel"), the student plays with a lot of options, and eventually we sculpt a topic that sits at the intersection of what we agree is worth knowing and is possible to know. Then the student comes back to the office with a draft and we begin the process of figuring out how to establish and maintain the focus.

It is all very hard work, but through it you will begin to learn how to negotiate what is an essential part of every writing process—in or out of college.



PART TWO

Style: Choosing Words, Composing Sentences, and Creating Tone

IN THIS SECTION WE WILL STUDY A COMPLEX, INTERRELATED SET of questions about style. Stylistic choices are influenced by the questions writers ask about **audience,** for example,

- Who is my audience?
- What do they know and expect to learn?

and about **voice:**

- What role should I adopt as I write?
- What is the right image to project?

Choices of audience and voice affect the **tone.** Therefore you must also ask,

- What is the appropriate tone?

All these decisions should guide you when you start writing sentences and you have to ask,

- What particular choices of nouns, verbs, modifiers, and so on, will help to establish the appropriate voice and tone for my audience?

We are obviously dealing with a complicated set of choices, which explains why we will talk about these various options at the same time.

Many textbooks discuss questions of style at the end, long after talking about audience and voice. But writers rarely change their style, and thus their dominant tone, at the end of a writing project. We make choices about style at the same time that we are making choices about audience and voice. Later we revise sentences to make them conform to the basic decisions about tone and style that direct almost every sentence we draft.

Chapter 4, "Fundamentals," summarizes the basic questions that writers ask about audience, voice, tone, and style, reminding you of the connections among those questions. Chapter 5, "Traditions in the Disciplines," turns your attention to the conventions in each of the four large groups of disciplines, examining particular stylistic choices (nouns, pronouns, verbs, and so on) made in the contexts of audience and voice. The chapter uses the discussion of those traditional choices as a basis for understanding the ways people in the disciplinary groups create appropriate tone. Chapter 5, in other words, focuses on both traditional stylistic choices and the reasons for those choices. And that focus should prepare you to consider "Adaptations" in Chapter 6.

4

Fundamentals: Style

What follows is basic information and advice about style that should help you to recollect the essential questions all writers need to ask about audience, voice, tone, and style. Although these four elements are treated separately in this chapter, you should always remember their intimate relationships to one another; answering questions about audience and voice determines your tone, and all of these elements work together to create style.

AUDIENCE

Audience refers to the particular person or group of people who will read what we have written, even if the audience is merely one that we only imagine reading our work, as is often the case in college writing. In addition to analyzing who an audience is, we need to consider what they expect from our writing. An audience that expects specialized knowledge from a fellow professional requires different stylistic choices than an audience that expects general information from a person outside of their profession.

Basics

We ask the following questions in order to understand an audience.

- What is their *background* (age, gender, class)?
- What is their *attitude* to my subject (beliefs, concerns, opinions)?

- What do they already *know* about my subject (particular information, level of expertise)?
- What do they *expect* from me (what they hope to learn, what level of expertise I possess, what tone I will adopt, what method I will use to achieve my aims with them)?
- What is my *relationship* to my audience (their knowledge of me, the extent to which we share assumptions and a sense of purpose)?
- What do I want my audience to *do* with what I write (act, think differently, use the information)?

The more knowledge we can gain about our audience, the better we can tailor our writing to their particular needs, interests, and expectations.

Complications

How can I accurately conceive of an assigned audience when I know my teacher is the reader whose judgment will determine my grade? And how do I analyze my teacher-audience? Often instructors ask students to write to an imagined audience or even to their classmates, but the instructor is the real audience, the audience who will judge the paper. And your instructor is not a single, never-changing audience. A teacher could read your work either as a representative of a larger group or as an individual, as a professional or as an amateur—one person can be many different audiences.

What audiences other than my immediate readers should I take into account? If, for example, you have written an essay for a teacher, the teacher might read the essay to the class, thus making them a secondary audience. Or, as a professional, you might write a memo to someone working for you to suggest an improvement in his or her performance and later show the memo to your supervisor in order to explain why you fired the employee.

Which of my audiences will make important judgments of my writing? In a professional situation more than one person could judge your writing. When you write a scientific research article, for instance, you could write for the readers of the journal—a primary audience—that you hope will publish your article. But the editors and referees of that journal—a secondary audience—will judge whether or not to publish your work, so you must also write with them in mind.

Exercise 4.1 Understanding Audience

Look at the first paragraph or two from an article in a popular magazine, such as *Time*, written for a broad audience. Next, find a specialized magazine, something in a field that interests you—the more specialized, the better. Again, read the opening paragraphs from one article. Explain, with specific examples, the differences in stylistic choices between the two pieces. How might the difference in audience account for those differences?

VOICE

As we discuss writers' voices, we will be asking questions about our beliefs and attitudes, about the roles we adopt when we write, and about the level of formality best to use for each piece of writing. A writer's voice is a mark of the role—the identity—that the writer adopts.

Basics

In order to decide what voice is appropriate, you should ask questions about yourself that are similar to those you asked about your audience.

- What information about my *background* could affect what I am writing (my age, gender, class)?
- What is my *attitude* to the subject (my beliefs, concerns, opinions)?
- What do I *know* about my subject (my particular information, my level of expertise)?
- What do I *expect* from my audience? That is to ask, What do I want my audience to *do* with what I write (act, think differently, use the information)?
- What is my *relationship* to my audience (their knowledge of me, the extent to which we share assumptions and a sense of purpose)?

Complications

How do I navigate through the various roles I must adopt as a writer, especially when more than one audience may read what I have written? You will need to use different sides of your personality in each different rhetorical situation (a term used to indicate the whole complex web of relationships among such elements as purpose, authorial voice, and audience expectations). Writing to a prospective employer calls for a different voice than writing to an old friend. And even writing to the same audience in different situations (for example, writing to tell a friend a funny story and writing to that same person to say that a mutual friend has died) requires different voices. The complexity of those considerations multiplies when your writing may be read by more than one audience: You will need to write with sensitivity to the primary audience yet be careful not to offend other possible audiences.

Exercise 4.2 Understanding Voice

You may have heard the advice to write as you talk. It's good advice as far as it goes, but you have to follow it in context of the fact that you talk differently in different situations. Write a letter to two different audiences, and use a voice that is appropriate for each. You might write two letters of complaint about some policy at your school—one to a good friend and one to an administrator (a dean or vice-president, for example). As you are writing, jot down things that you thought about writing but decided against.

After writing each letter, look for details that demonstrate the differences in the voice you use in each. Look at your word choices, the length and complexity of your sentences, even your punctuation (an exclamation point creates a very different sound than a question mark does). In addition to explaining the differences between your two letters, suggest ways (perhaps using the notes on your discarded options) to make the voice in each letter more effective.

TONE

In the tone of our writing we hear evidence of the *relationship* between ourselves and our readers. When your parents said to you, "Don't take that tone of voice with me," they were telling you that you had stepped outside of an appropriate relationship with them.

Basics

The questions that we ask about audience and voice lead us to craft an effective, appropriate tone for a particular rhetorical situation. The situations that you have most often faced in school have called for an academic tone. The standard expectations for academic prose call on you to ask the following questions:

- Is my tone *reasonable and fair*?
- Is my tone *authoritative*, without being condescending, pretentious, adversarial, or artificial?
- Is my tone relatively *formal,* without being stuffy?
- Is my tone *consistent*?

Complications

How can I write in my own voice—with a personal tone—and yet write formally—with an impersonal, academic tone? Like every writer you must find the point (and it may be a different point in each different piece of writing) at which you balance the need for an individual voice with the need to conform to the conventions of formal prose. In the next chapter we will see how writers in the various disciplines attempt this balance.

Exercise 4.3 Understanding Tone

Read through the following passages from published prose. For each one, describe the author, the audience, and the purpose: what sort of person wrote this for what sort of reader(s) and why? The evidence for your descriptions should be particular stylistic choices that determine the tone of each piece. Next—assuming that you are correct about the author, audience, and purpose of each passage—suggest revisions that could make the tone more appropriate and effective.

> 1. In the Amazon Basin the greatest violence sometimes begins as a flicker of light beyond the horizon. There in the perfect bowl of the night sky, untouched by light from any human source, a thunderstorm sends its premonitory signal and begins a slow journey to the observer, who thinks: the world is about to change. And so it was one night at the edge of rain forest north of Manuas, where I sat in the dark, working my mind through the labyrinths of field biology and ambition, tired, bored, and ready for any chance distraction.
>
> Each evening after dinner I carried a chair to a nearby clearing to escape the noise and stink of the camp. . . . To the south most of the forest had been cut and burned to create pastures. In the daytime cattle browsed in remorseless heat bouncing off the yellow clay, and at night animals and spirits edged out onto the ruined land. To the north the virgin rain forest began, one of the great surviving wildernesses of the world, stretching 500 kilometers before it broke apart and dwindled into gallery woodland among the savannas. . . .
>
> 2. Nay . . . this is not fair. *You* wish to think all the world respectable, and are hurt if I speak ill of anybody. I only want to think *you* perfect, and you set yourself against it. Do not be afraid of my running into any excess, of my encroaching on your privilege of universal good will. You need not. There are few people whom I really love, and still fewer of whom I think well. The more I see of the world, the more I am dissatisfied with it; and every day confirms my belief of the inconsistency of all human characters, and of the little dependence that can be placed on the appearance of either merit or sense. I have met with two

> instances lately; one I will not mention; the other is Charlotte's marriage. It is unaccountable! in every view it is unaccountable!
>
> 3. First, what is meant by anguish? The existentialists say at once that man is anguish. What that means is this: the man who involves himself and who realizes that he is not only the person he chooses to be, but also a lawmaker who is, at the same time, choosing all mankind as well as himself, cannot help escape the feeling of his total and deep responsibility. Of course, there are many people who are not anxious; but we claim that they are hiding their anxiety, that they are fleeing from it. Certainly, many people believe that when they do something, they themselves are the only ones involved, and when someone says to them, "What if everyone acted that way?" they shrug their shoulders and answer, "Everyone doesn't act that way." But really, one should always ask himself, "What would happen if everybody looked at things that way?" There is no escaping this disturbing thought except by a kind of double-dealing. A man who lies and makes excuses for himself by saying, "not everybody does that," is someone with an uneasy conscience, because the act of lying implies that a universal value is conferred upon the lie.

STYLE

Style is difficult to define. When I ask students what style means, they usually make a distinction between being in style and having style. Someone who dresses according to standards of current style, as established in magazines and on television, is *in* style ("He wears only Polo shirts and sweaters; he's really in style."). Whereas someone who seems unique, who creates an image that is not guided by established norms, *has* style ("She's really different; she has a style all her own."). Writers are in a tricky situation because they must master both of these types of style. They must conform to certain standards (no one can devise a completely new language and expect to communicate), yet they must also write with the unique voice and perspective of an individual. Style thus brings us back to that tricky relationship between individuality and conformity.

Basics

We have already asked many questions that influence style; we begin to answer them when we make particular stylistic choices. Style is of course heavily influenced by choice of verbs, and composition teachers consequently talk a lot about active voice, passive voice, and linking verbs.

When you use a verb that is in **active voice,** the verb indicates some action taken by the subject of the sentence:

Sally [subject] *sings* [active-voice verb] the blues.

Tom [subject] *teases* [active-voice verb] us.

The bell [subject] *tolls* [active-voice verb] twelve o'clock.

Verbs in the **passive voice** indicate that action is being taken toward a passive subject:

The blues [subject] *were sung* [passive-voice verb] by Sally.

We [subject] *were teased* [passive-voice verb] by Tom.

The bell [subject] *was tolled* [passive-voice verb] by the church warden.

Linking verbs connect—link—the subject to a word (in the predicate) that renames or describes the subject:

The blues [subject] *are* [linking verb] great [describes the subject].

Tom [subject] *is* [linking verb] a tease [renames the subject].

The bell [subject] *seems* [linking verb] broken [describes the subject].

One of the stylistic choices we will talk about often in Part Two is that among active-voice verbs, passive-voice verbs, and linking verbs. If you are at all uncertain about these verb types, you might need to review them in a grammar handbook. If you do so, you will see that this book uses the term *active verb* in a slightly different way than a grammar book. Technically, only transitive verbs have grammatical voice. The sentence "Sally sings the blues" uses a transitive verb in active voice, but the sentence "Sally sings" uses an intransitive, "complete" verb; so *sings* is in active voice in the first sentence but not in the second. The transitive/intransitive distinction confuses stylistic options—the verb *sings* has much the same stylistic effect whether it's called transitive or intransitive, whether it's technically in active voice or not. Therefore, my own small rebellion against tradition is to refer to all verbs, transitive and intransitive, that express a subject's action as active.

Another set of choices controls your level of formality; several specific devices can create the level you desire. To move toward the informal, personal end of the spectrum,

- use contractions,
- refer to yourself with the pronoun *I* and to your audience with *you*,
- use active, rather than passive, verbs
- keep your sentences short and simple, and

- pick common, everyday words (even slang words if you want a really informal style).

Conversely, one effects a more formal style by

- eschewing contractions,
- referring to oneself in the third person and avoiding direct address to one's audience,
- preferring passive constructions,
- constructing lengthy, complicated sentences, and
- valorizing pedantic (for example, *pedantic*) or Latinate (i.e., words that end in *-tion*) terminology.

Maybe it is not fair to poke fun at the formal style by demonstrating its excesses as I do in the preceding list; we know that your professors—your real audience—usually expect writing in "formal" papers to be fairly formal, and you can accomplish that by following the suggestions in the list while observing the basic advice given earlier for creating effective voice and tone.

You will usually be safe if you follow the guidelines that the stylistic sages offer students:

- be concise and clear,
- create clear images by using concrete nouns and active verbs,
- employ simple, familiar language,
- vary sentence length and pattern,
- use parallelism and other devices for emphasis (repetition, placement, key terms, concrete details), and
- use effective transitional terms to guide your readers through your sentences.

Complications

Can I apply the rules for effective style in most, if not all, situations? You will probably not be surprised by my saying that even these old reliables may fail in some situations. If, for instance, you try too hard to be concise, your audience might think your tone is curt. In some cultures, too few words may make writers seem as if they don't have time for their audience. To take a different example, a scientific paper that uses active verbs all the time will probably make the audience think that the writers are inappropriately calling attention to themselves rather than to the subject of the experiment (for example, "We measured samples of X" rather than "Samples of X were measured"). Finally, consider this case: In this book I am using bulleted lists, boldface print, and different type fonts, but if I were to use these formatting devices in an article in a journal of literary criticism, my readers might find me condescending, and my article might not be published.

As you can see, I am pushing you toward the next chapter, in which we will talk about the stylistic conventions of different disciplines. This brief review serves only to lead you from the common questions and assumptions about audience, voice, tone, and style to a realization that individual stylistic choices are best made when you consider the special requirements of each situation. No general rules will guide you through all the choices you will make. Good writers devote time to choosing among a vast number of options, but they choose effectively because they (1) equip themselves with a large number of options and (2) they know what choices will best create the effects they seek.

Exercise 4.4 Understanding Style

Select a paper that you have written for a college class. Try to find an expository essay, one in which your purpose for writing was to explain or analyze something for your audience. If you cannot find that kind of paper, an argumentative essay will do. Just avoid autobiographical essays, descriptions, or narratives. We want to look at something that is as close as possible to the kind of writing you will be doing in courses in your major—and eventually in your profession.

Analyze the paper's style according to the list of questions that follows. (If the paper is more than two or three pages long, just concentrate on the first twenty or so sentences).

1. What pronouns (if any) do you use to refer to yourself and your reader?
2. How many of the main verbs are active? How many are passive? How many are linking verbs?
3. Give at least five examples of words that typify the paper's level of formality.
4. List some other features (nouns, modifiers, etc.) that might help your audience to understand the style of your paper.
5. What is the tone? (Do you use any contractions, any verbs in imperative mood, any direct references to the audience, etc.?)
6. In general, would you say that your style and tone are appropriate for the situation? Explain the reasons for your choices of style and tone, how those choices should have created the effects on your audience that you hoped for.

5

Traditions in the Disciplines: Style

As you train for and then enter a profession, you will probably develop a clear sense of your various audiences, your role—voice—in relation to each audience and the style and tone that are expected in your field. As a result, your stylistic choices may become less troublesome than they are now. Let me illustrate. A team of researchers compared a group of political science majors to a group of legislative analysts who worked for a state legislature. The researchers wanted to see how the students and the professionals imagined the audiences they wrote for. The students always described their audiences impersonally, in general terms like "a reader" or "whoever happens to reads this." The students also seemed to think about audience in contradictory terms. They imagined a knowledgeable reader but thought they had to write as if that reader knew nothing about their subject. They never described the audience as their teacher, but they worried about leaving out points that the teacher thought important. The artificial situation in the classroom (trying to write like a professional for an audience of other professionals—even though the actual audience is the teacher) confused the students' sense of audience. And that kind of confusion makes writers uncertain about stylistic choices. The professional writers (the legislative analysts), on the other hand, described specific audiences, recognized differences between those audiences, and knew just what their audiences expected and needed from their writing (Odell, Goswami, and Quick).

How can you reduce your own uncertainty about stylistic choices? For one thing, you can try to write for real professional audiences. Think of your teacher as a representative of a profession rather than as your teacher, and write to him or her in that capacity.

You can also try to put yourself in a realistic professional context. Let me explain. A group of people studying disciplinary writing found that students who were writing introductions to research reports in a biology class effectively constructed their voice and their audience if they first got involved in the process of collecting data, conducting an experiment, and consulting experts for responses to their drafts. Those students who tried to write an introduction before getting involved in a scientific process—in other words, without becoming scientists—seemed to complete far less successful introductions than their classmates who had created a professional context (Walvoord et al. 193–99).

Finally, you can familiarize yourself with the stylistic choices that have become the traditional standards in your field *and* understand why those choices have become standard. That is what we are going to begin to do now. In each of the sections on the four large disciplinary groups, we will look at some of the stylistic features that are traditional—nouns and pronouns, verbs, modifiers, and diction. You must also, of course, think of how these specific choices converge to create the sentences you write. Long noun phrases such as we find in the natural sciences will both lengthen sentences and emphasize the subject over the verb; passive verbs will usually create longer sentences than active verbs; extensive modification will complicate and lengthen sentences with extra words and phrases, forcing you to use parallel structures to maintain clarity; and so on. Having considered particular stylistic choices, we will discuss tone in each of the disciplinary groups and think about the ways it reflects the various values and purposes of the disciplines.

NATURAL SCIENCES

We begin with the natural sciences because their stylistic traditions are firmly, some might say rigidly, established and because those traditions are often different from what you probably learned about style in composition courses.

Scientists typically know exactly who their audiences are; they may have met or even worked with many of the scientists who share their specialized research interests. They also know that they are expected to write in an objective, impersonal, scientific voice. An effective voice in a scientific paper is a little like an effective umpire or referee in a sports contest—the less the audience is aware of the referee, or the personal voice of the scientist, the better.

The task of normal science is not primarily to interpret its material (that's what your art, music, and English teachers do) but to accumulate concrete information about things in nature. In order for new information to be accepted by the scientific community, scientists must gather and present that information through accepted methods. Consequently, we don't often see scientific papers that violate stylistic traditions. Let's survey those traditions.

Nouns and Pronouns

Nouns Because the aim of science is to add to our knowledge of the objects and phenomena of nature, its style is heavily nominal; that is, it *names* the things it studies. Even natural processes are usually named as things: the Krebs cycle, photosynthesis, mitosis. Scientific laws, too, are treated as fixed and predictable things. Scientific style thus runs directly counter to some of the rules of style that you have probably been taught. Scientists string together long noun phrases, modifying nouns with several other nouns to identify some complicated thing. In a study of scientific writing, William Vande Kopple demonstrates the prominence of noun phrases. Here are two of Vande Kopple's examples. Each of these groups of words functions as one noun:

> The possible pathophysiological bases of the beneficial effects of dexamethasone therapy in bacterial meningitis . . .
>
> . . . the physiognomy and dynamics of vegetation on serpentine and on hydrothermally altered soils including an open stand structure, the absence of intermediate vegetation size classes, xeromorphism, and a high proportion of endemics (330–31)

These examples may be longer than average in natural science writing, but they clearly exemplify the precision that noun phrases offer scientists.

Scientists must, however, be cautious about using long noun phrases. Although they are commonplace, accepted, and even necessary in scientific writing, their structure makes them liable to include misplaced and misrelated modifiers. In *How to Write and Publish a Scientific Paper*, Robert A. Day gives this example:

> Thymic humoral factor (THF) is a single heat-stable polypeptide isolated from calf thymus composed of 31 amino acids with molecular weight of 3,200. (170)

What do the words *with molecular weight of 3,200* modify? "Amino acids"? No. "Calf thymus"? No. They modify "THF." This vague sentence would be easy to revise by using commas and changing words to emphasize parallelism:

> Thymic humoral factor (THF) is a single heat-stable polypeptide *that is* isolated from calf thymus, *is* composed of 31 amino acids, *and has a* molecular weight of 3,200.

The point is that scientific writers must recognize the tendency of long noun phrases to separate and confuse the relationship between modifiers and the items they modify.

Scientists must be specific, which usually means using noun phrases, when writing titles. For example, "Seasonal Algal Succession and Cultural Eutrophication in Three North Temperate Lakes" is better than "Ecological Studies of Some Northern Lakes" (McMillen 7). A person who does not understand the aims of science might prefer the shorter title: A literary critic would be more likely to write the shorter title because he or she would see the study of three particular lakes as an example of the larger truths to be found in northern lakes in general. But scientists who prematurely jump to "larger truths" fail to understand their proper aim and role. The scientific writer aims to present only the facts. Of course scientists are not really this objective, but they must maintain the voice, the role, of an objective observer.

Pronouns Science directs its attention to the objects of the natural world, and the scientists who report their findings about nature try to keep themselves out of the picture as much as possible. Scientists sparingly use the first-person pronouns *I* and *we.* Because scientists use many passive verb constructions (we will talk about these in a minute), they do not need to refer to themselves at all. In other words, they do not often choose between the informal "I collected samples" and the more formal "One collected samples" because they are most likely to write, in passive voice, "Samples were collected."

When a first-person pronoun is used, it is often the plural, *we,* rather than the singular, *I.* Scientists collaborate more than other professionals, and often a research article has several different authors. In fact, the article is probably written by only one person, the head of the research team, but all the members of the team are listed as authors. The effect of using *we,* again, is to minimize the importance of the individual doing the research in order to maximize the emphasis on the research itself.

A scientific review article, which summarizes a large body of research on a particular subject, is usually written by an individual rather than a research team, and the author of a review article may occasionally use *I* (we'll talk more about review articles later in this chapter). But even in review articles, scientists do not typically use *we* to indicate a collaboration between a single author and his or her audience, as in

> We [author and audience together] must recognize the importance of this finding.

In that sentence, the writer inappropriately steps out of the detached and objective role of a scientist.

Verbs

Tense The standards for verb tenses are these:

Use present tense to refer to others' published work:

> DeBroglie's theories *are* . . .

not

> DeBroglie's theories *were* . . . ,

and past tense to refer to your own work:

> In this study, rates of change *were measured* by . . .

The logic behind the stylistic choice is that already published work is now *presently* part of the body of scientific knowledge, actively being used in further research. The scientist's own work has not yet achieved that status, and he or she must not claim that status by using present tense. If scientists were to refer to their own results in terms like these,

> Levels of progesterone in lactating females *rise* on day 15 of the menstrual cycle.

the present-tense verb, *rise*, would proclaim their findings to be presently accepted fact. Instead, they would write,

> Levels of progesterone in lactating females *were found* to rise on day 15 of the menstrual cycle.

The past tense of the passive verb, *were found*, recognizes the fact that the scientific community will determine whether or not the findings will be granted the status of accepted fact.

However, while the ideas or findings of others are recorded in present tense, as presently accepted fact (DeBroglie's theories *are* . . .), the *work* that they did—the observing, measuring, recording, and so forth—does not deserve the status of fact and is therefore written in past or present perfect tense:

DeBroglie observed . . . [past]
or DeBroglie has observed . . . [present perfect]

Active, Passive, and Linking Verbs Some experts advise scientists to increase their use of active verbs, but passive verbs, for reasons we talked about earlier, are often preferred in traditional scientific writing. Greg Myers's study of the revisions that scientists were asked to make in order to get their work published illustrates the pressure put on scientists to depersonalize their writing. One scientist, for instance, had to revise the active verb "*peppered* with stretches" to the passive "*were found* to contain stretches" and the active verb "We *propose* that" to the linking verb "One interpretation *would be* that . . ." (*Writing Biology* 88–89).

Although scientists usually avoid active constructions with personal pronouns (for example, *I discovered* . . .), they do use active verbs if the things that are part of a study are the subjects of the sentences. In other words, *I reveal* is not a generally acceptable use of active voice, but *Gas chromatography studies reveal* is common and effective.

The verb use also varies in the different sections of a scientific article. When I began writing this book, I became curious about some of the articles published by a research team that I was a part of in the mid-seventies. One of our articles, published in a journal titled *Biology of Reproduction,* seems typical of the way scientists use verbs. The article is fairly short, 130 sentences. Overall, about half of the main verbs are passives; the rest are split about equally between active and linking verbs. But the overall percentage of passives is high because the Materials and Methods section contains over 90 percent passives. In the other sections active, passive, and linking verbs are roughly equal in number. Because scientists emphasize their methods (so that others can repeat an experiment and get the same results) rather than themselves, they must necessarily use passive verbs in the Methods section:

Isotope levels were recorded at five-minute intervals.
rather than We recorded isotope levels at five-minute intervals.

You need to learn the traditions for verb use in scientific writing, but it is also essential to remember that the *quality* of your style is far more important than the percentages of active, passive, and linking verbs. Consider the following versions of the same sentence; the first is in passive voice.

> Significantly increased production of progesterone was observed in ovaries of APTr rats with viable blastocysts as compared to mated APTr rats in which fertilization was prevented by tubal ligation.

The clumsiness of that sentence might cause you to try active verbs instead:

> I observed more production of progesterone in ovaries of APTr rats with viable blastocysts than I did in mated APTr rats in which I prevented fertilization by tubal ligation.

But if you were to submit a paper with that sentence in it to a scientific journal, you would be told to revise it (if your paper was not simply rejected because of your inappropriate style). The second version places far too much emphasis on the author. Finally, here is the published version:

> Ovaries of APTr rats with viable blastocysts synthesized significantly more progesterone than mated APTr rats in which fertilization was prevented by tubal ligation. (Chatterton, MacDonald, and Ward 77)

Here the writers convey information about the subject of the study in active voice ("Ovaries . . . synthesized") but deemphasize their own role by using passive voice ("fertilization was prevented by tubal ligation"). This set of examples shows that scientists can both observe conventions *and* write effective prose.

Modifiers

First, as we said when talking about nouns, scientists must specify, as precisely as possible, the things that they study, so they often use strings of heavily modified nouns. In the noun phrase *stress-induced pre-carcinogenic beta particles,* the noun, *particles,* is modified by the other words, including other nouns.

Second, scientists use modifiers to tone down the boldness of their claims. Again Myers's study of scientists' revisions shows typical changes: "acceptable" revised to "provisionally acceptable" and "is dependent on" revised to "might depend on" (*Writing Biology* 89). The words *provisionally* and *might* make the statement less assertive and thus reinforce the image of the humble, unassuming scientist.

Diction

Scientific writing may appear to be pretentious because its language is highly technical, filled with jargon that nonexperts cannot comprehend. But scientists really do not prefer pretentious language; they would not describe the pre-mating habits of lizards by saying that the male *perambulates* around his partner. Most scientists would prefer the simple word, *walk.* But then the scientist would indicate exactly how quickly and closely the lizard walked—in metric measurements. Word choices are made for the sake of directness and precise clarity. And of course scientists must know the precise connotations of simple words as they are used in particular fields. The word *orbit,* for instance, means different things in astronomy and physics and possibly different things in different branches of physics.

The point is that scientific language must rely on technical words. In a comparison of scientific and historical language, linguist J. R. Martin gets to the heart of the issue:

> It is utter nonsense to suggest that students learn science better when they are encouraged to use their own words. . . . Science is not science apart from the technical discourse it has developed to reconstruct the world. (230)

Now let me stretch this discussion of diction to include a special group of words, the choices of which are guided by some well-established traditions: titles. First of all, natural scientists usually avoid the combinations of catchy and explanatory phrases, joined by colons ("The Devil's Party: A Study of Milton's Influence on the Romantic Poets"), that we often see in the humanities and that some English teacher may have praised you for writing. Scientists use a title to describe, precisely, the content of a paper. One reason is that scientists access information through databases, like the *Science Citation Index;* they consult these to see what has been written on a certain subject or by certain authors. Scientists' work is entered in such a database through the key terms in titles, so if they leave out a key term, their work will not be found by others who might want to use it. One of the articles that my research group published is titled "Indomethacin Inhibition of Estradiol-Induced Lactogenesis." If Bob Chatterton, our boss, had instead called the article "Factors Inhibiting Lactogenesis," other scientists interested in effects of indomethacin and estradiol would not have been able to access our publication.

A title also gives readers the first impression of the writer's voice; it begins to establish a tone. One of the scientists Myers studied had to revise his title from

> An Argument for a Common Evolutionary Origin of tRNAs and rRNAs
>
> *to* tRNA-rRNA Sequence Homologies: Evidence for a Common Evolutionary Origin? (*Writing Biology* 87)

The revised title shifts the emphasis from the author's "argument" to the things being studied, the "tRNA-rRNA Sequence Homologies." A title that brings attention to the author or to the importance of the author's claims rather than to the information the article offers sets an inappropriate tone.

Tone

A few comments about tone will review what we have been saying about stylistic choices in scientific writing.

The purpose of scientific writing is, speaking very generally, to bring new information and ideas into the accumulating body of scientific knowledge. Scientists must therefore offer something that is new and original but must make that offering in the context of already established knowledge. Scientists never start from scratch; "And now for something completely different" works for Monty Python, but not for scientists. Consequently, as scientists go through a process of writing and rewriting, they tend to move toward greater emphasis on how their findings fit into established knowledge and less emphasis on the brilliance of their own originality. As one of Myers's scientists said, "Total originality [is] sure death" (*Writing Biology* 48) and Myers found that "words like *new*, *fundamental*, and *important* are all but forbidden, and even *interesting* seems to provoke some readers" (*Writing Biology* 59). All writers are strongly aware of themselves early in the process of writing and then develop increasing awareness of their audience. But scientists must be especially careful to put nature in the spotlight as they stand in the wings, proud of what they have found in nature rather than of themselves.

Exercise 5.1 Analyzing Professional Style in the Natural Sciences

Your first task is to find a sample of professional writing to analyze. This could be a sample of writing in the discipline you plan to major in (you might get recommendations from a professor). Journals will offer shorter pieces, from which you could select subsections for close analysis; or your professor may wish to suggest a book or books. If you use an article from a scientific journal and the article is organized in an IMRAD format, select a short passage (a subsection or two or three paragraphs, roughly eight to twelve sentences long) from the Introduction, Materials and Methods or Results, and Discussion sections.

Study these passages to see how they use the stylistic features we studied in this section. Make your answers as specific as possible, giving exact counts and examples whenever possible.

1. **Nouns** Are there long, complex noun phrases?
2. **Pronouns** How do the authors use *I*, *you*, *we*, *one*, and other pronouns?

3. **Verbs** Are there any verb tenses that do not seem to follow the general guidelines mentioned in this section, and if there are, what might be the reason(s)? How frequently do the authors use active, passive, and linking verbs?
4. **Modifiers** In what ways do the authors tend to qualify the claims they make?
5. **Diction** What seems interesting about the authors' word choices? Is the language full of jargon? What percentage of the words are too technical for you to understand?
6. **Sentences** How do the various word choices converge to create sentences, simple or complicated, long or short?
7. **Tone** How formal or informal is the language? What are some strategies the authors use to establish the tone?

Exercise 5.2 Analyzing a Student's Style in the Natural Sciences

The following paragraphs are taken from the Introduction, Materials and Methods, and Discussion sections of a research report written by a senior biology major. Analyze these passages for the same items that you examined in Exercise 5.1, answering the same questions about nouns, pronouns, verbs, modifiers, diction, sentences, and tone. In addition, indicate what seems to you especially well written (cite specific sentences or groups of sentences and your reasons for thinking they are good) and what you would change (revise sentences or groups of sentences and say why you think your revisions are called for). Finally, correct any faulty grammatical constructions.

The Vasoactivity of Methylphenidate HCL in Isolated Rat Aortas

INTRODUCTION

Methylphenidate HCL, more commonly known as Ritalin™, is one of the most commonly prescribed drugs today in the treatment of attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD). Extensive clinical research has shown the drug to be highly effective in its treatment of ADD and ADHD. When searching the literature for mechanistic responses to the drug, however, information is sparse and virtually nonexistent, apart from the fact that it is known to be a dopamine re-uptake inhibitor. How can a drug be so widely prescribed when all that is known of it is its clinical response and not its mechanistic pathway and physiological behavior? In this investigation, we began by looking at the vasoactivity of methylphenidate in the vascular smooth muscle contained within isolated rat aortas. Previous work done in this lab has shown methylphenidate to be a vasoconstrictor and to have greater contractile effects on younger than on older rats. In pursuing these previous results, we asked questions such as, Is there an actual difference in activity between older and younger animals? If so, which experiences the greater contractile effects, and what type of receptors is this drug binding to?

MATERIALS AND METHODS

Four water-jacketed organ chambers, bubbled with 95% O_2 and 5% CO_2, were filled with 15 mL physiological salt solution (PSS) and allowed to equilibrate for one hour. After one hour, the bathing solution was changed and equilibration was allowed for an additional 20 minutes. The viability of the rings was then tested by adding 0.5 mL of 3.2×10^{-6} M norepinephrine to achieve a bath concentration of 10^{-7} M. A minimum of 0.5 g increase in tension indicated a suitably reactive ring. The chamber was then rinsed twice with PSS and refilled with 15 mL PSS. Tension was adjusted to 1.5 g, if necessary.

DISCUSSION

In this investigation the physiological effects of methylphenidate, or Ritalin®, were documented. We found older rats responded to the drug more than younger rats and had greater sensitivity to the drug as well. Mechanistically, we ruled out that methylphenidate operates through the endothelium-derived contracting factor, endothelin. In the future, we hope to discover what types of receptors methylphenidate binds to and also attempt to unveil the complete cellular mechanism.

Exercise 5.3 Tone and Style in the Natural Sciences

In Chapter 2 (Exercise 2.6) you worked with a formal research report (a comparative study of commercial disinfectants) written by a biology student. That student wrote another paper on the same topic, but for a popular audience. That paper is reproduced here.

How does the tone differ from the professional and student samples in Exercises 5.1 and 5.2 that were written for scientists? Explain the difference in tone by examining nouns, pronouns, verbs, modifiers, and diction. Do the differences seem appropriate? What would you change? Be specific.

The Best Deal in Household Disinfectants

Household disinfectants are a common sight in grocery stores, on television advertisements, and in magazine ads. Their germ-killing abilities have been employed in millions of homes and studied in numerous scientific experiments (Pelczar). It has become widely accepted that reducing the number of harmful bacteria and other microorganisms in home, school, and work environments can help prevent disease and illness (Gerhardt). However, not all disinfectants achieve the same level of bactericidal activity as effectively and economically as others. In order to find the most effective household disinfectant for its price, I conducted my own investigation into this matter.

The disinfectants under scrutiny were several popular products: Lysol Disinfectant, Pine-Sol Cleaner, Clorox Clean-Up, and The Works Glass and Surface Cleaner. Each was tested for its bactericidal effect on a common household germ, *Staphylococcus aureus.* The test bacterium was added to both concentrated and diluted solutions of each of the disinfectants. After 5-, 10-, 15-minute intervals, I noted which cleaners and which dilutions were able to kill the test organism.

The results of my study indicated that Lysol, Pine-Sol, and Clorox were capable of eliminating bacteria. Lysol was effective at the lowest concentration (a 1:1000 dilution), while Pine-Sol and Clorox showed germ-killing effects at maximum dilutions of 1:100 and 1:25, respectively. In contrast, even a concentrated solution of The Works was completely ineffective in killing microorganisms.

In order to find the best value in disinfectants, a consumer needs to be aware not only of which product achieves the desired effect at the lowest concentration, but also of which product does so for the lowest cost. I found approximate prices per 100 mL of product to be 93 cents for Lysol, 23 cents for Pine-Sol, and 17 cents for Clorox. However, since only 1 mL Lysol is needed to make 1 L of disinfectant, it would be more helpful to say that it costs .93 cent (less than one cent!) to make one liter of disinfectant using Lysol. Following the same idea, it would cost 2.3 cents to make one liter of disinfectant using Pine-Sol, and 6.8 cents to make one liter of disinfectant using Clorox Clean-Up. These numbers clearly show that although Lysol has a higher price tag per bottle, it is actually the best buy in terms of cost to eliminate microorganisms.

Of course, in addition to the four cleaners tested in this study, there are a multitude of other brands. Other disinfectants are generally products containing the same active ingredients as Lysol (phenol), Pine-Sol (pine oil), and Clorox (chlorine). Any generic or brand-name disinfectant containing a similar percentage of these active ingredients should be as effective in eliminating germs as the products tested here.

Exercise 5.4 Experimenting with Style in the Natural Sciences

Write a Methods section that explains how to do something that you do well. You may choose to write it for one of two audiences: fellow experts on the subject or a general audience. After writing your Methods section, explain some of the stylistic choices you made and why you think they are appropriate for the audience you chose. Next, rewrite two or three paragraphs (roughly ten to fifteen sentences) for the other audience. After composing those revisions, point out the specific changes you made (in your use of nouns, pronouns, verbs, modifiers, and diction) and why you made them.

WORKSHOP 5

Style in the Natural Sciences

In this workshop you will consider Clarence's questions about style, analyze his paper for the appropriateness and effectiveness of its style, and revise the style of some parts of the paper. If you want to review the assignment for Clarence's paper, it can be found in Chapter 2, page 43. You will also need to refer to the complete text of Clarence's paper in Chapter 2 in order to complete this workshop.

CLARENCE'S QUESTIONS ABOUT STYLE

Clarence had several specific questions about stylistic choices throughout his paper. He wonders what word choices would create the clearest prose. But he also wonders about disciplinary traditions—the conventions (of number use, for example) that he is supposed to follow. I've divided the questions from Clarence's journal into those two categories.

Questions about Conventions

- When should I use figures for numbers and when should they be written out?
- When talking about my critters, should I be calling them pillbugs, insects, *Armadillidium,* or a mixture?
- Can I just use the proper scientific name once early in the abstract then not again?
- Must I include the Latin species name in the title? Should I include both different species names that were tested?
- Can I give a quoted textbook or dictionary definition of acclimation, or should I explain it in my own words? Does it fit/apply better to my study if I define it in the words I wish?
- Should I direct quote Abrahamson in the Introduction?

Questions about Wording, Clarity, and Accuracy

- Wording of sets and groups and sets of groups—how do I clearly define for the reader when I'm discussing a "group" of ten bugs tested and when I'm discussing a "set" of "groups" of bugs at the same temperature tested over the duration of the investigation?
- Did I have a temperature gradient in which the bugs moved or an arena in which they moved which had the gradient? What's the more accurate way to say this?
- How do I word the fact that I compared the means of temperature limits?

- I want to say "thermal acclimation." Is this repetitive or redundant?
- In the Materials and Methods, does "investigation" best refer to the entire undertaking—saying that the study is an individual part of it?
- In the Results, how do I define the apparent high temperature limit? Is calling it a wall or barrier going too far in suggesting it cannot be crossed? Can the bugs sense this limit as an actual detrimental/lethal temperature?

ANALYSIS AND REVISION OF CLARENCE'S STYLE

In this section you will first analyze Clarence's style, looking at the specific choices (nouns and pronouns, verbs, modifiers, diction, and sentences) that establish tone—as you did in Exercises 5.1 and 5.2. But here you will also practice revising to improve style—to enhance clarity, to sharpen through conciseness, and so on.

To begin with, read through Clarence's paper (Chapter 2, pages 44–51) to get a feel for its tone. Describe the tone generally and explain in what ways it is or is not appropriate for the assignment.

Next, choose three passages, from three different sections of the paper, and examine them for their choices of nouns, verbs, and so on that create tone. Ask the questions given in Exercise 5.1. As you analyze the three passages, think about how you would revise them. Begin by citing three or four samples of sentences that you find especially good.

Before revising the three passages, study the following sample revisions of the beginning of the Introduction, the last paragraph of the Results, and the last paragraph of the Discussion. Read Clarence's copy and then the revised version. Explain which revisions you find better than the original. Remember that your judgments about which sentences are better depend on both the quality of the style (which version is clearer, more concise, and so on) and the appropriateness of the style (which version does a better job of following the conventions that the assignment calls for).

Excerpts from Clarence's Original Paper

> INTRODUCTION
>
> Thermal acclimation is the process by which any given organism adjusts to the current applicable temperature conditions. This becomes an important biological issue in terms of ecosystems because environmental temperature change might drastically reduce, or completely eliminate, an organism's habitat due to the degree to which the organism can acclimate respective to the thermal change (Abrahamson 1989). Cossins (1987) has commented that "with regard to life on earth, temperature is, next to light, the most potent environmental component." He goes on to explain how temperature effects change in organisms in two specific ways. First, physiological effects can be noted. Secondly, in line

with the focus of this work, are evolutionary effects. This is directly tied to the effect on an animal of specific temperatures or changes in temperature over a given length of time.

RESULTS

During each test of the study it was observed that each group of bugs would go a specific and characteristic distance from the hot end of the arena before very abruptly turning in the opposite direction. Graphical analysis of this observed difference for each group shows that the incubator set illustrates a slight trend of increasing tolerance to hotter temperatures. The room temperature group also shows a tendency toward tolerating an increasingly warmer temperature with much less variation. The refrigerator group shows a somewhat erratic pattern of temperature limits as shown in Figure 3.

DISCUSSION

The slight increasing tendency of incubator groups to be able to withstand hotter temperatures indicated in Figure 3 directly correlates with previous acclimation work done in other species (Edney 1964). The incubator cultures clearly illustrate how a longer exposure to a given temperature can be expected to acclimate the animals so as to be able to better cope with or tolerate extreme temperatures. The observation of the "wall" in the arena at the hottest temperatures indicates that the bugs in some sense must be able to sense a temperature that would be detrimental. Further observation of the individual that crossed this line on day 19 and began to move spastically before its quick demise suggests that the sensing of this detrimental condition is very accurate, and indeed the pillbug (*Armadillidium vulgare*) is able to sense very minute temperature differences (Whittow 1973).

Revised Version

INTRODUCTION

Thermal acclimation is the process of adjusting to the current applicable temperature conditions. This is an important ecological issue because temperature change might reduce or eliminate an organism's habitat if the organism cannot acclimate to thermal change (Abrahamson 1989). Temperature effects two changes in organisms: physiological and evolutionary (Cossins 1987). The latter are the focus of this study, which investigated the effect on pillbugs of changes in temperature over a given length of time.

RESULTS

During each test of the study we observed that each group of bugs went a specific and characteristic distance from the thermally elevated end of the arena before very abruptly turning in the opposite direction. Graphical analysis of the observed distance for each group showed that the incubated and room temperature groups grew increasingly tolerant of hotter temperatures, the room temperature group doing so with much less variation. The refrigerator group showed a somewhat erratic pattern of temperature limits (Figure 3).

DISCUSSION

The slightly increasing ability of incubator groups to withstand hotter temperatures (Figure 3) directly correlates with acclimation work in other species (Edney 1964). The incubator cultures clearly illustrated how a longer exposure to a given temperature can acclimate the animals to better tolerate extreme temperatures. The observation of the "wall" in the arena at the hottest temperatures indicated that the bugs must sense a detrimental temperature. Furthermore, the individual that crossed this line on day 19 and began to move spastically before its quick demise suggested that the sensing of this detrimental condition is very accurate, and indeed the pillbug (*Armadillidium vulgare*) is able to sense very minute temperature differences (Whittow 1973).

Now revise the three passages that you selected.

Questions for You

Reconsider Clarence's list of questions about style. Select one or two that you find important or interesting. Do you think Clarence answered these questions (by virtue of the choices he made in writing his paper) well? If not, how would you have answered them differently? What questions about style would you add to Clarence's list?

HUMANITIES

People tend to believe that writing in the natural sciences differs completely from writing in the humanities. In the preceding section we dispelled one persistent misperception: Scientists, like writers in the humanities and all other fields, make stylistic choices for rhetorical reasons. Scientists do not tell facts with complete objectivity; they choose words that will create a tone that is appropriate for their purpose and audience because they want to convince their audience.

Critics, classicists, and other writers in the humanities make their stylistic choices for the same sets of reasons that drive scientists' choices. But the particular choices of writers in the humanities differ from those of writers in the sciences because their purpose, their roles, and their audiences' expectations differ.

The objects of study in the humanities are not nature's "things," but the things that humans produce: our works of art and thought, our cultural histories, and so on. And the aim of writers in the humanities is not to measure these "things" with a scientist's measuring tools and add to our factual knowledge, but to interpret—to act as a mediator between the materials (a novel, a painting, a symphony) and the audience.

Professionals in the humanities also create original philosophy and critical theory, types of writing that call for wholly new sets of stylistic choices. We, however, will focus on the interpretive writing in the humanities because that is the kind of writing that students compose in most humanities classes.

The audience of interpretive writing expects to hear the voice of an authority, even an impassioned authority, who makes sense of the materials, who explains and makes human cultural history meaningful and coherent. The audience expects the critic to help them understand the poem, but in a way that enriches and enlivens their experience of the poem.

Let's see how these aims and expectations influence the traditional stylistic choices in the humanities.

Nouns and Pronouns

Nouns We find more abstract nouns in the humanities than in other fields because the humanities more often deal in abstractions. Topics of typical articles published in journals in the humanities include "the *subjective and rhetorical nature* of Odysseus' narration" and "*realism and characterization* in Dickens." Though studied in specific contexts (*The Odyssey* and the novels of Charles Dickens), the topics are abstract. Because people writing in the humanities are usually trying to illuminate or enrich their readers' experience and understanding of things (works of art or concepts in philosophy) that are not stable, precise, and predictable, they do not need the elaborate noun strings that we see in the sciences. Instead of words that attempt to specify precisely what things are being discussed (e.g., 20a-hydroxypregn-4-en-3-one biosynthesis), the nouns in the humanities often try to evoke a sense of the multiplicity of the meanings. Favorite nouns in literary criticism, for example, include *paradox, ambiguity, resonance,* and, of course, *complexity.*

Pronouns Audiences expect a strong, authoritative, interpretive voice from writers in the humanities. Because these writers assume a right of individual authority, a mandate to speak in their own voices, it is no surprise that they typically use first-person pronouns. Not many years ago writers in the humanities were expected to play a more formal, distanced, and supposedly objective role, so they often referred to themselves in the third person: "The author supposes . . ." or "One sees in this text. . . ." But recent theories have emphasized the subjective nature of all interpretation, and writers in the humanities have, for the most part, begun to speak more openly and directly as themselves.

Audiences can be troubled by writers who refer to themselves excessively. Saying "I think," for example, is usually unnecessary because we obviously write what we think. However, when writers in the humanities do refer to themselves, they use first person and take advantage of the power of an authoritative voice. If they want to emphasize some shared knowledge, or understanding, or way of thinking, they might choose to use the first-person plural, *we.* That choice creates a tone of shared, personal, human thought. The use of *we* also allows a writer to draw an audience into a process of thought:

> We have seen what the burial practices of the Sumerians tell us about their culture; now we can gather additional information from Sumerian beliefs about the afterlife.

Scientists, you recall, almost never use *we* unless referring to two or more authors.

Though writers in the humanities may refer to themselves directly, they rarely use the pronoun *you* in direct address to an audience. When a philosopher writes, for instance, about the nature of spiritual experience, he or she does not expect the audience to jump up and do something. Rather, the audience faces no pressure to make a choice (as do the audiences of business writers); they merely contemplate what they are reading. When you write in the humanities, then, you may draw your audience into a common *we,* but you should not challenge them with a direct *you.* You might write,

> We sense a longing for lost values in the novels of ____.

But you would avoid writing,

> You should sense a longing for lost values as you read the novels of ____.

Verbs

Tense Tenses should reflect reality, should let a reader know what happened when. So,

> George Eliot *composed* "Janet's Repentance" in 1857.

and

> Napoleon *was defeated* at Waterloo.

The past tense refers to past events. People in the humanities also use past tense to indicate past activities of thinking and writing:

> Eliot *believed* in the evolution of morality.

and

> Immanuel Kant *constructed* a philosophy of metaphysics.

But human thought, art, and history are also alive, actively influencing the present. Therefore, when discussing Eliot's short story "Janet's Repentance," a literary critic says,

> Janet *suffers* an abusive husband.

rather than

> Janet *suffered* an abusive husband.

Use present tense to refer to what happens in a work of literature or other fine art. Similarly, Kant's metaphysical philosophy still *influences* (present tense) some contemporary philosophers.

Writers in the humanities also refer to the writing of their peers in present tense. If you were writing about George Eliot and wanted to use information from an essay written by George Levine in 1976, you might say,

> Levine *believes* [present tense] that Eliot . . .

But let's suppose that your purpose was to talk about ideas of historical interest rather than those presently active in your thinking; you might call attention to a review of *Adam Bede* written in 1859 and write,

> Dallas's review *helped* [past tense] to establish Eliot's reputation.

Then again, if Dallas's review is presently influencing your thinking, you would write,

> This classic review *offers* [present tense] a starting point for our present study.

Active, Passive, and Linking Verbs Active voice helps to convey the present, dynamic quality of art; it also helps writers in the humanities to lend their voices authority and power. Whereas a biologist might say,

> Ladybird beetles *were observed* [passive] to have consumed x number of aphids per minute.

a historian might write,

> Genghis Khan *devoured* [active] his enemies.

In the introductory sections of the four articles in a recent edition of *Nineteenth-Century Literature* (September, 1992), more than 60 percent of the verbs in the main clauses were active (that figure went up to 80 percent in one article, and a preponderance of active verbs also appears in samples from philosophy, history,[1] and classics). Fewer than 10 percent of the verbs in the literary criticism were in passive voice. The remaining 30-some percent of verbs were linking verbs. So we see an obvious difference between writing style in the humanities and in the natural sciences, where the largest percentage of verbs are, because of the almost exclusive use of passive voice in the Methods and Materials sections, in the passive voice.

Modifiers

In *An Introduction to Reasoning,* we read, "The vocabulary of literary and artistic criticism is particularly rich in modal [modifying, or qualifying] terms and phrases" (Toulmin, Rieke, and Janik 360); this is the case because critics can never say that something is necessarily true. Logic in the humanities (though I should note that this characterization does not always apply to logic in philosophy) rarely works through simple steps to necessary conclusions. Rather, critics "qualify . . . claims . . . by indicating the particular . . . angle of view from which they are put forward" (Toulmin, Rieke, and Janik 360). So, to be clear and accurate, a critic might write,

> *Since the first-person narrative blocks examination of the character's psyche,* we will study him *from the perspective of the effects of his actions on his community.*

---

[1] The fact that I have included history in the humanities rather than in the social sciences in the first two chapters indicates the fluidity of disciplinary boundaries. In this chapter I locate history in the humanities because its stylistic conventions are much closer to those of other humanities than to those of sociology, psychology, and other social sciences. In some other chapters, however, writing by historians is discussed as a social science. If you were to ask several of your teachers whether history should be housed in the humanities or the social sciences, you might get a split vote.

Readers demand these long, complex qualifiers (the italicized words in the preceding example). If you fail to modify appropriately, your teacher might criticize you as the following comment on an essay written for a literature class criticizes the writer:

> Sometimes you imply that historical context of the novel must be our first guide to understanding, while at other times you seem to say that characters' psychological make-up is the true window to an accurate vision of the book's meaning. Your argument never takes clear shape because you do not establish a consistent theoretical *point of view.*

Be sure to use modifiers to state your assumptions and perspectives, your "angles of view," as precisely as possible.

Diction

People in the humanities write more authoritatively if their writing conveys some stylistic artistry, if their words breathe their human personalities. Consider, for example, sentences written by a scientist and a classicist, both of whom end their essays with comments on the errors of fellow scholars. The scientist writes,

> It is necessary now to analyze the limitations of methodology practiced by Hunsinger and Holt (1987).

Compare that to the first two sentences of classicist K. R. Popper's conclusion to an article published in *Classical Quarterly:*

> I am now at the end of my story. I only wish to add a few more comments on what I regard as shocking mistranslations. (17)

We hear Popper's personalized shock.

Writers in the humanities favor the fluid phrase over the hyper-precise language of the natural sciences. Even if what is written by, say, a literary critic offers no new "facts," the way it is said can make it worth reading. "Reading a literary argument," for example, "may be like hearing a sermon on a familiar theme. What is preached may not be really new, but it is brought home to us with an appropriate elegance . . ." (Fahnestock and Secor 94).

Because people in the humanities like to evoke the richness of the subjects they are studying, they often attempt to do so by enriching their vocabulary. The critic's subject may be the relationship between lovers (in a novel or the history of a nation), rather than the hormones secreted by people in love. And the critic may use the word *amatory* instead of *loving* or *pulchritude* instead of *beauty.* Writers in the humanities enjoy relatively free range to delight in language, in its variety, its multitude of effects, its unpredictability.

Nonetheless, the language used in the humanities is, generally speaking, less highly specialized and more accessible to nonspecialists than is the language of science. Although there are certainly many works written by literary critics or philosophers that even other critics and philosophers cannot understand, they usually study that which is familiar to people—characters and plots in literature or trends in popular culture––and they refer to general ideas in familiar terms.

Tone

At the beginning of this section on writing in the humanities, we talked about the writer as mediator between the subject and the reader. That interpretive role calls for a tone of authority, yet openness. When writing about the humanities you will have to set a tone that marks you as someone worth listening to, someone whose voice can clarify and enrich, but you will also have to avoid creating a tone of objective certainty. Readers may be eager to hear what you have to say about Shakespeare, or Aristotle, or Blues Traveller, but your readers also know that your interpretations cannot be offered as facts. This means that your readers will not hold you responsible for constructing absolute truths, but at the same time it means that they will expect your insights and understanding to be worth reading. Your tone should therefore reflect your comprehension of *and* your delight in the richness of your subject.

To accomplish that goal, writers in the humanities cultivate complexity. What George Eliot said of writing novels—that novelists must not "lapse from the picture to the diagram"—is also true of writing about novels—and about other subjects studied in the humanities. A natural scientist prefers the simplicity of a diagram because it helps to clarify the facts, but a critic or historian must be faithful to the rich details of the picture, even if that picture presents contradictions and paradox. For a writer in the humanities, tone—the means by which writers establish their relationship with their readers—must create a sense of shared enjoyment in subjects that have much to offer *because* they cannot be diagrammed; instead, we simply relish their bounty.

Exercise 5.5 Analyzing Professional Style in the Humanities

Your first task is to find a sample of professional writing to analyze. This could be samples of writing in the discipline you plan to major in (you might get recommendations from a professor). Journals will offer shorter pieces, from which you could select subsections for close analysis; or your professor may wish to suggest a book or books. Select a short passage (two or three paragraphs, roughly eight to twelve sentences long) from the beginning, middle, and end of the piece you chose.

Study these passages to see how they use the stylistic features we studied in this section. Make your answers as specific as possible, giving exact counts and examples whenever possible.

1. **Nouns** Are there long, complex noun phrases?
2. **Pronouns** How do the authors use *I*, *you*, *we*, *one*, and other pronouns?
3. **Verbs** Are there any verb tenses that do not seem to follow the general guidelines mentioned in this section, and if there are, what might be the reason(s)? How frequently do the authors use active, passive, and linking verbs?
4. **Modifiers** In what ways do the authors tend to qualify the claims they make?
5. **Diction** What seems interesting about the authors' word choices? Is the language full of jargon? What percentage of the words are too technical for you to understand?
6. **Sentences** How do the various word choices converge to create sentences, simple or complicated, long or short?
7. **Tone** How formal or informal is the language? What are some strategies the authors use to establish the tone?

Exercise 5.6 Analyzing a Student's Style in the Humanities

The following paragraphs are taken from the beginning, middle, and end of an essay written by a sophomore for a course in classical literature. Analyze these passages for the same items that you examined in Exercise 5.5, answering the same questions about nouns, pronouns, verbs, modifiers, diction, sentences, and tone. In addition, indicate what seems to you especially well written (cite specific sentences or groups of sentences and your reasons for thinking they are good) and what you would change (revise sentences or groups of sentences and say why you think your revisions are called for). Finally, correct any faulty grammatical constructions.

> I know too little about Euripides to venture forth an explanation of why he felt what he did about love. From my reading of *Hippolytus*, however, I feel secure in saying that Euripides was painfully aware of the effects of love not only on the loved and loving, but also on anyone

else with whom these lovers come into contact. In *Hippolytus,* Euripides portrays love in an unflattering light: it is powerful, greedy, and destructive. Little good comes of it.

The "Introduction" to our text suggests that in the play we might see "the quarrel between sacred and profane love, represented by Artemis and Aphrodite" (Greene and Lattimore 235). This is a helpful way of dividing and looking at love; I will further divide the concept into the love that the goddesses embody and its human results. . . .

Aphrodite is powerful and greedy, demanding the worship of all men, and easily bringing about the destruction of the one man who does not honor her. Artemis does not appear to have quite the power of Aphrodite, and she doesn't demand the worship of all men. But Artemis, like Aphrodite, demands much.

Although she does not require all men, if a man wants fellowship with her he must devote himself completely, remaining completely chaste. This is apparently a very difficult thing; Hippolytus stands alone in his degree of purity and devotion: he says, "With no man else I share this privilege / that I am with you and to your words / can answer words" (85). . . .

In this play we see what troubles love brings, and we see only the troubles it brings. Euripides focuses only on the problems. Love brings death to Hippolytus and Phaedra, and grief to all the rest. Sacred and profane love differ in nature and bring about different, though similar, results. But the two loves, with all their differences, are both self-serving, and their human results undesirable. Euripides does not celebrate the mysteries of love, dedication, and devotion, but mourns and fears them.

Exercise 5.7 Tone and Style in the Humanities

The following paragraphs are taken from the beginning, middle, and end of a book review written by a senior English major for her college newspaper. Analyze these passages to assess the tone of the review. You will have to take into account that this piece was not written for a professor in the humanities but for students, professors, staff members—the whole college community. What choices (of nouns, verbs, and so forth) did the author make to create her tone? Is it effective for the review's broad audience?

ANNIE DILLARD. *THE WRITING LIFE.* (NEW YORK: HARPERCOLLINS PUBLISHERS, 1989.)

In the beginning was the word.

And the word became flesh and lived among us, but before the word could live it had to be created and formed, integrated into a sentence which with other sentences formed a paragraph and ultimately a page, and, if all went well, grew finally into a book of magnificent proportions and epic significance.

But it began with the word, and so it is with the word that Annie Dillard begins her meditation upon the life and the craft of a writer. She explores the writing process, using both examples from her own experience and observations from other writers, and she also examines the life of a writer—the people, the vision, the agony of trying to fill and subdue a blank page. . . .

The writing life involves far greater sacrifice than simply the sacrifice of favorite passages or cherished visions. It often demands of the writer the sacrifice of any other semblance of a life. Dillard reflects that it is an existence "colorless to the point of sensory deprivation. . . . A writer's childhood may well have been the occasion of his only firsthand experience," and the rest of the writer's life is spent recalling and describing details remembered from the past (44). Described this way, the life sounds bleak and barren, the writer's sacrifice of color and joy so that the audience can (ideally but not often realistically) appreciate the resulting work of art.

Permeating these tales of struggle is Dillard's doubt about the writing life. Why, she asks frequently, would anyone seek such a life? Why does she lead this life herself? In a casual conversation with a neighbor, she finds herself admitting that "I hated to write. I said I would rather do anything else" (53). Yet write she does, and she continues to toil over the words and the sentences and the chapters even as she ponders why she does. . . .

Dillard echoes the advice of many other writers I've read: If you can do anything else, do it. Write only if you must, but if you must, be prepared for it to consume you, to demand your life. She comments wryly on the folly of youth: "If you ask a twenty-one-year-old poet whose poetry he likes, he might say unblushingly, 'Nobody's.' In his youth, he has not yet understood that poets like poetry, and novelists like novels; he himself likes only the role, the thought of himself in a hat" (70). And so she challenges those of us who are enchanted by the glory of the writing life and have no idea of the sacrifices it requires.

This challenge, coupled with her honesty about the agony of the life, makes this a worthwhile read for anyone contemplating writing as a career and as a lifestyle. For anyone who simply likes to read, it provides a perspective on the shaping of a work and on the mind of the author that will enhance your appreciation next time you delve into the world of a book.

Exercise 5.8 Experimenting with Style in the Humanities

Reviews, such as the one used for Exercise 5.7, are common in all the disciplines. Especially when they are written for a general audience, they tend to be written in a style like that which is common in the humanities. Find a piece of writing from a discipline outside of the humanities (perhaps a sample that you found for Exercise 5.1 in the natural sciences) and write a review of it. After writing your review, compare its style (once again focusing on nouns, verbs, and other specific features that shape a style and determine its tone) to the style of the piece of writing that you reviewed.

WORKSHOP 6

Style in the Humanities

In this workshop you will consider Colleen's questions about style, analyze her paper for the appropriateness and effectiveness of its style, and revise the style of some parts of the paper. If you want to review the assignment for Colleen's paper, it can be found in Chapter 2, page 23. You will also need to refer to the complete text of Colleen's paper in Chapter 2 in order to complete this workshop.

COLLEEN'S QUESTIONS ABOUT STYLE

Colleen appears to have few uncertainties about her style, but is she as self-aware as she should be? Note the contradiction in the second sentence below; she says, "I wrote how I talk," yet she avoids two of the most common features of normal speech—the use of *I* and "familiar" (by which I think she means colloquial) language. She also uses verb tenses as they are supposed to be used when writing about literature, which is not the way they are used in conversation. As you revise parts of her essay, you will probably think of several questions that Colleen could have asked herself. Here is what she wrote in her journal:

> I made no conscious decisions. I wrote how I talk—except I was careful to avoid first person—I just don't like that. I even avoided familiar language except for in the 1st paragraph— "tag-sale puzzle." As a textual study, the paper didn't call for a lot of poetic devices.

ANALYSIS AND REVISION OF COLLEEN'S STYLE

In this section you will first analyze Colleen's style, looking at the specific choices (nouns and pronouns, verbs, modifiers, diction, and sentences) that establish tone—as you did in Exercises 5.5 and 5.6. But here you will also practice revising to improve style—to enhance clarity, to sharpen through conciseness, and so on.

To begin with, read through Colleen's paper (Chapter 2, pages 24–28) to get a feel for its tone. Describe the tone generally and explain in what ways it is or is not appropriate for the assignment.

Next, choose three passages, from three different sections of the paper, and examine them for their choices of nouns, verbs, and so on that create tone. Ask the questions given in Exercise 5.5. As you analyze the three passages, think about how you would revise them. Begin by citing three or four samples of sentences that you find especially good.

Before revising the three passages, study the following sample revisions of the first and last paragraphs of Colleen's essay. Read Colleen's copy and then the revised version. Explain which revisions you find better than the original. Remember that your judgments about which sentences are better depend on both the quality of the style (which version is clearer, more concise, and so on) and the appropriateness of the style (which version does a better job of following the conventions that the assignment calls for).

Excerpts from Colleen's Original Essay

> Essentially, the plot of Shakespeare's *Hamlet* centers on the family trio of Claudius, Gertrude, and Hamlet. At the very crux of this trio is Queen Gertrude, who forms the delicate bridge between the protagonist and the villain, loving one as a concerned mother and the other as a doting wife. The resulting tension puts Gertrude at the fulcrum of a balance, as she cannot fully direct her love toward both men at the same time. Shakespeare places Gertrude in this situation through his master plot, but allows her no opportunity to reveal to the audience her deepest feelings regarding the matter. The queen has no soliloquies, and even in her long scenes of dialogue, such as the closet scene in Act III, she does little of the talking. As a result, Gertrude is a tag-sale puzzle, missing so many pieces that only the bare bones of her character are left as clues to her whole person. . . .
>
> As none of this occurs in the Q2 text, the conclusive moment of the queen's life takes on an entirely different meaning when the texts are read together. A Gertrude who knows of her husband's villainy and plot against her son is cautiously suspicious of Claudius's every move. During the duel, when the king sets a cup of wine out for Hamlet, the queen limited to Q2 innocently suspects nothing of her loving husband and takes the cup mistakenly and tragically; however, the two-text queen has a motive for taking the goblet. She loves her son faithfully, betrays her husband loathingly, and uses her last deed to keep her bed chamber vow, by raising her goblet to toast:
>
> Here Hamlet, thy mother drinks to thee. (v.ii.75)

Revised Version

> The plot of Shakespeare's *Hamlet* centers on the family trio of Claudius, Gertrude, and Hamlet. At the crux of this trio is Queen Gertrude, the

> delicate link between Hamlet, the protagonist, and Claudius, the antagonist, loving one as a concerned mother and the other as a doting wife. Gertrude becomes the fulcrum of an impossible balance, tipping the scales when she directs her love toward one or the other, but unable to embrace both equally. The plot places Gertrude in this situation but allows her no opportunity to reveal to the audience her feelings regarding the matter. She delivers no soliloquies, and even in her long scenes of dialogue, such as the closet scene in Act III, she speaks only 40 of the 219 lines. As a result, Gertrude is central to the plot, but incomplete as a character.
>
> As none of this occurs in the Q2 text, the conclusive moment of the queen's life takes on an entirely different meaning when the two texts are read simultaneously. The more complex Gertrude that emerges, who knows of Claudius's murder of her husband and plot against her son, is cautiously suspicious of Claudius's every move. During the duel, when the king sets a cup of wine out for Hamlet, the queen as we know her from only Q2 innocently suspects nothing of her loving husband and takes the cup mistakenly and tragically; however, the queen that we know from the two texts has a motive for taking the goblet. She loves her son faithfully. She betrays her husband loathingly. And she uses her last deed to keep her bed chamber vow, raising her goblet to toast, "Here Hamlet, thy mother drinks to thee."

Now revise the three passages that you selected.

Questions for You

Reconsider Colleen's questions about style. Select one or two that you find important or interesting. Do you think Colleen answered these questions (by virtue of the choices she made in writing her paper) well? If not, how would you have answered them differently? What questions would you add to Colleen's?

SOCIAL SCIENCES

Of all the large groups of writers that we talk about in this book, those in the social sciences are probably criticized the most—perhaps most often by themselves. Two sociologists who wrote the essay "On Sharpening Sociologists' Prose" say, "Many complain about sociologists' prose. . . . [Some sociologists] mire ideas in glutinous lingo. Most fall somewhere between the lambent and the lumbering" (Selvin and Wilson 205). We should not get caught up in what a friend of mine calls "recreational criticism," the kind of playful venom that we see in the quotation above. Harsh and often myopic judgments about social science writing seem less helpful than recognizing that stylistic choices in the social sciences are probably more difficult than in any of the other large groups we are studying.

Think again about the subject of human love. The biologist measures the release of hormones and pheromones during a kiss, the literary critic talks about how a kiss illuminates the web of feelings or the ironic tensions between two characters, and the sociologist or anthropologist studies the role of kissing in mating rituals. How enormously difficult is the social scientist's task: The aim is to discover—and possibly diagram—factual, scientific knowledge, but the subject asserts a more complex picture than any created in novels or poems. Social scientists—psychologists, political scientists, economists, anthropologists, sociologists, historians—face the problem of trying to diagram impossibly complex pictures. Let's also agree that the difficulty of writing well increases in proportion to the difficulty of establishing clear goals and having confidence about achieving those goals. Given that premise, we can begin to understand the problems of writing in the social sciences.

Consider the typical purposes of writing in the social sciences. Remember first that these are "sciences," not arts; they share the goal of the natural sciences—accumulating knowledge so as to be able to construct generalities (in the natural sciences these are called natural laws) that make their subjects understandable. But the subjects in the social sciences are human beings—in their psychological, social, and political conditions and relations. Human conditions and relations are too complicated to pin down with scientific certainty—or at least humans believe they are too complex, and what an audience believes is the reality that a writer faces.

As we go through this section, then, we will have to examine two primary tensions that confront writers in the social sciences: (1) the need for an objective, scientific voice versus the need for an authoritative, personal voice; and (2) the need for convincing, scientific data versus the need to qualify the data and recognize that it cannot validate social scientific laws.

A former student who is now in graduate school in psychology sent me a stack of papers that she wrote in graduate school. (Her name, by the way, is Ann. I mention that because we will be looking at her work again later in this chapter.) Professors at Ann's school told her that one of the things they liked about her application to their graduate program was her writing style—personal, energetic, direct. Once she began writing papers for some of those same people, the situation changed a little. Most thought that her style was not professional enough; one said that it read "too much like a novel." She argued that in order to write about people she had to write from an involved, personal perspective; but her professors urged a more detached, scientific style. To confuse things even more, not all of Ann's profs wanted her to make her style more scientific. One, for example, liked her personal approach to a case study. She had to learn to adjust her style to the demands of her various audiences.

Social scientists seem to quarrel about writing more than people in other fields. Sociologist Howard S. Becker spends a large part of his time in *Writing for Social Scientists* lamenting the stuffy writing of sociologists. Richard Hummel and Gary Foster, also sociologists, respond to Becker, claiming that although most sociological writing is "dull, verbose, pretentious," it is what readers expect. To teach students to write otherwise, they argue, is therefore to lead them to write in a style that will not be accepted by their peers.

I have belabored the point enough now: Social scientists must negotiate extremely mixed demands. And the writing they produce in response to those demands is sometimes difficult to locate in clear traditions. With those warnings in mind, we plunge in.

Nouns and Pronouns

Nouns Becker argues that sociologists often use vague, general nouns because they often find it difficult to identify the agents or causes of the conditions they observe. They can gather evidence to show that women are discriminated against in particular job situations or that biracial children may experience common problems in identity formation, but they cannot so easily identify exactly who (agents) does the discriminating or what causes the identity problems the children face. One obvious way out of these situations is to use vague, general nouns and noun phrases for the subjects of sentences:

> *The majority of men in the workplace* discriminate . . .
>
> *or* *Various social forces* cause . . .

(The other common solution is to use passive voice and thus avoid naming a subject—more on that option below.) Becker claims that using vague, general nouns is bad sociology. All you and I can do is recognize these typical stylistic choices and understand the reasons for them.

The prose of social scientists also reveals an interesting combination of common and technical nouns—predictable, I think, in light of the need to combine features of writing in the humanities and the natural sciences. Read this sentence from an article published in the *American Journal of Political Science* (a journal that generally favors quantitative over qualitative research):

> Opinion research is beset by two major types of "artifactual" variance: huge amounts of overtime response instability and the common tendency for seemingly trivial changes in questionnaire form to affect the expression of attitudes. (Zaller and Feldman 579)

In the first clause the words *Opinion research* are common and accessible to a layperson, but *"artifactual" variance* has the ring of technical, scientific jargon. And when we turn to the two types of variance, we see one described with specialized nouns—*overtime response instability* (using a scientific-sounding noun phrase, with the nouns, *overtime* and *response,* acting as adjectives)—and the other in familiar nouns—*tendency, changes, questionnaire form,* and *expression of attitudes.*

Pronouns Again, in their choices of pronouns to refer to themselves and their readers, social scientists present an interesting mix. In a sampling of articles written in important social science journals, there is extensive use of *we* and *I*—possibly more than would appear in a sample of journals in the humanities. In one essay in the *American Journal of Sociology*, five sentences in a row had *we* for the subject: "we transformed," "we performed," "we estimated," "we dropped," and "we summed." But there is also occasional uncertainty about using a first-person subject and an active verb instead of a more "scientific sounding" passive construction. The third sentence of the abstract of an article in the *American Sociological Review* reads, "I show that. . . ." But in the next sentence the author writes, "Finally, an analogue . . . is defined." Apparently he and the editors thought it was better to make an awkward shift from active to passive verbs than to continue the personal tone and write "I defined an analogue." But they did choose "*I show* . . ." rather than "*It is shown* that. . . ." The mix of active and passive verbs reveals the tension over the question of voice and tone in the writing of social scientists.

Some experts believe that the voice of an essay in the social sciences must be stronger than that of an essay in the natural sciences because sociologists do not begin with an accepted body of shared knowledge. According to one, "The sociological audience, sharing no uniform framework of thought or criteria of proof, must be urged, persuaded, directed along the lines of the author's thoughts" (Bazerman, *Shaping* 46). Consequently, social scientists generally create a voice that is more personal than that of writers in the natural sciences but not as individualistic as the writer's voice in the humanities. Sociologists will not usually imply, as would physicists, "Pay no attention to me; just look at the facts I have discovered and how they fit into our beliefs about the reality of things in nature"; nor would they take the approach of music critics: "Listen to my interpretations; I think you'll find them enriching."

Instead, the voice of a social scientist aspires to be the voice of a colleague who suggests, "We're all in the business of understanding human nature and society; listen to something interesting I've discovered. I think you'll agree that it makes sense." So social science authors will use the first-person plural pronoun, as in "*we* psychologists," to signal their shared work, and in this practice they resemble critics, who use *we* to refer to the shared thinking process of author and reader, which natural scientists almost never do.

We and *I* are commonly employed to help create a strong voice, but using those first-person pronouns creates tension because they do not sound objective, detached, scientific. The word *I* causes special trouble because it sets the writer apart from the shared work of fellow professionals. The tension between the need for and the dangers of an individualized voice confronts all writers in the social sciences, who must make stylistic choices to suit each individual situation. Therefore, though you cannot carry from this discussion a knowledge of any always correct pronoun choices, you should at least know that you must predict the potential effects of the options you select.

Verbs

Tense Social scientists handle tenses much like natural scientists. They convey what they (the authors) *did* in past tense:

> We *conducted* . . .

They set forth the *claims* that they are making in the paper in present tense:

> In this study we *demonstrate* . . .

They refer to accepted, previously published *information* in present tense:

> *Evidence* from Hayes and Lathrop's 1987 study *shows* . . .

And they refer to the published work of *individuals* in either the present perfect:

> Hayes and Lathrop, in a study of . . . , *have shown* . . .

or the simple past tense:

In 1972 Toller *argued* . . .

Active, Passive, and Linking Verbs When talking about nouns in the social sciences, I noted that social scientists may be reluctant to specify agents or causes of conditions they observe. And if a writer chooses to avoid naming the agent of an action, the writer is left with passive voice. If sociologists cannot say exactly which people in the workplace discriminate against women, they might choose to write, in passive voice,

Women are discriminated against.

So we see some passive constructions in the social sciences for that reason.

Passives also appear for the same reasons and in the same places as they do in the natural sciences. Writers normally call more attention to the subject of a study than to themselves, and this need clearly influences the Methods section of articles. Remember that the Materials and Methods section from a sample article in the natural sciences contained about 90 percent passives (compared to 30 percent passives in the rest of the article). A sample article from the *American Journal of Sociology* (Glass and Camarigg) also has the largest percentage of passive constructions in its "Data and Methods" section. But only about 40 percent of the verbs in that section are passives. As a whole the article contains 44 percent active verbs, 22 percent passive verbs, and 28 percent linking verbs. By comparison, the natural science sample uses 28 percent active, 49 percent passive, and 23 percent linking (Chatterton, MacDonald, and Ward). And the sample from the humanities has 69 percent active, 6 percent passive, and 25 percent linking (Sanborn). Now let me say, emphatically, that my samples are not nearly large enough to allow me to draw any general conclusions. They merely affirm long-standing perceptions about these three large disciplinary groups. I give you these figures now to show again the possible results of pressures on writers in the social sciences to write both like natural scientists—objectively presenting impersonal facts, in passive voice—*and* like critics—personally illuminating parts of the immensely complex natures and societies of human beings, in active voice.

Modifiers

Because of the tensions that trouble the writing of social scientists, modifiers are sometimes used for what seem like cross purposes—to admit uncertainty and to create a tone of confidence. Let me explain. Natural scientists use qualifiers to admit that their findings are not yet established facts:

> The results of our study *may possibly* provide bases for other work on polypeptides.

But these scientists can afford to be humble in this way because they fully expect that their findings will become established. Social scientists must also humbly admit that what they have observed is not yet accepted by their professional community, but they realize that their findings may never become part of a body of accepted knowledge—social scientists do not share bodies of established knowledge in the way that natural scientists do. So a chemist, let's call her Schwartz, might write,

> The structure was observed to be like that of . . . ,
>
> *or* The structure observed *may* be like . . . ,
>
> *or* It *seems possible* that the structure *could* be like . . . ,

depending on how certain or uncertain Schwartz is. But she hopes and believes that colleagues will accept the observation and later refer to it by writing,

> The structure *is* . . . (Schwartz, 1996).

Schwartz's work becomes fact, part of a body of information that chemists in her specialization share. These other chemists can use her work as a starting point for their own work.

More common in social science is the situation we see in a political science article. The first paragraph states an assumption on which, the authors say, "virtually all public opinion research proceeds." The second paragraph then refers to evidence that has made this assumption "increasingly dubious." The authors have thus set the stage for the third paragraph, where they say,

> We propose a new understanding. . . . Most citizens, we argue, simply do not possess preformed attitudes at the level of specificity demanded in surveys. Rather, they carry around in their heads only a mix of partially consistent ideas and considerations. (Zaller and Feldman 579)

You see how strong the language is. The authors "propose" something new. And although they use the qualifier *we argue* in the second sentence, by the third sentence the authors again make a bold, unqualified statement: Citizens "carry around in their heads only a mix of partially consistent ideas and considerations." Because the authors do not begin with a given body of facts to build on, they must convince their readers that the new ideas they propose are worth listening to, and a strong authorial voice, not weakened by qualifiers, helps to give the writers an authoritative tone.

Later in the article they write,

> But if, as we contend, people typically . . .

The modifying terms *as we contend* admit that the authors' contentions are not accepted fact, but the same modifiers also emphasize the personal importance of the authors; this is a type of modifier that rarely appears in the natural sciences but is common in the humanities and social sciences.

However, the authors must also qualify their work scientifically. When they discuss a survey from which they take much of their data, they write,

> The survey *attempted* to measure . . .
>
> *and* We thus *feel* the Pilot Study data are the best . . .

rather than

> The survey measured . . .
>
> *or* The Pilot Study data are the best . . .

I warned you that writing in the social sciences is complicated.

Diction

We don't need to spend much time on diction in the social sciences because we discussed it in the earlier sections on nouns and modifiers. I need only to remind you that social scientists use a combination of technical and common language. Further, because they must establish an authoritative, personal voice, they use language that marks them as professionals. In other words, they use jargon. When Howard Becker tried to get one of his sociology students to use simpler language, she told him that it didn't sound "classy." Often, at least until they have established a reputation that allows them to go against the grain, social scientists rely heavily on academic-sounding, jargon-laden language. Even Becker, in an article he wrote thirty years before his book on social science writing, penned the following:

> The data on which this study is based were gathered in the course of a study of the genesis of identification with an occupation in students doing graduate work in physiology, philosophy, and mechanical engineering. (Becker and Carper 341)

He might now ask his students to revise that sentence to

> We studied graduate students in physiology, philosophy, and mechanical engineering to see how they began to identify with their jobs.

Which sentence is better? That seems to me a question that cannot be answered without understanding a whole range of conditions—an audience's expectations, an author's reputation, the standards of a publication, and so forth.

If a student or beginning sociologist were rewriting the sentence, he or she might prefer the original sentence—because it sounds "classier" and is therefore more likely to be given a high grade or to be published. Although you should not think that you have to opt for the more stilted, academic-sounding language, you should know that it is often the standard—in classes and publications. You should also, and most importantly, remember that a writer's choices are never contained in simple either/or propositions. If you wanted to revise the sentence, you could choose academic diction and even passive voice but still make the sentence simpler and more readable:

> Graduate students in physiology, philosophy, and mechanical engineering were studied to chart their processes of acquiring occupational identity.

Your options are many—even within the traditions of your field.

Tone

We have already noted the key point about tone: It has to be adjusted to the situation. Generally speaking, the tone of social science writing combines personal authority—a strong, but certainly not arrogant, voice—and scientific objectivity. In creating appropriate tone, writers navigate through the tensions of writing in the social sciences that we have seen throughout this section. Becker (in *Writing for Social Scientists*) talks about a popular style used by anthropologists: the "I-was-there persona"; it is common in qualitative research. Writers using this strategy may present plentiful information—in scientific formats such as tables of data. But that information is gathered by a *person* who is intimately knowledgeable about the people being observed. The author of such a piece spices the scientific data with expressions of personal involvement such as "I witnessed. . . . " Those very words subtly claim the validity of an eyewitness. This is but one way that social scientists use language to overcome the inherent difficulties of writing in their field. At the risk of sounding like a grandmother, I'll remind you one last time to beware the complex tensions that confront writing in the social sciences, and I'll offer one last line of advice: Read all that you can, make yourself aware of the stylistic strategies of social science writers, and heavily stock your own storehouse of options.

Exercise 5.9 Analyzing Professional Style in the Social Sciences

Your first task is to find a sample of professional writing to analyze. This could be examples of writing in the discipline you plan to major in (you might get recommendations from a professor). Journals will offer shorter pieces, from which you could select subsections for close analysis; or your professor may wish to suggest a book or books. If you use an article from a social science journal and the article is organized in an IMRAD format, select a short passage (a subsection or two or three paragraphs, roughly eight to twelve sentences long) from the Introduction, Materials and Methods or Results, and Discussion sections.

Study these passages to see how they use the stylistic features we studied in this section. Make your answers as specific as possible, giving exact counts and examples whenever possible.

1. **Nouns** Are there long, complex noun phrases?
2. **Pronouns** How do the authors use *I, you, we, one,* and other pronouns?
3. **Verbs** Are there any verb tenses that do not seem to follow the general guidelines mentioned in this section, and if there are, what might be the reason(s)? How frequently do the authors use active, passive, and linking verbs?
4. **Modifiers** In what ways do the authors tend to qualify the claims they make?
5. **Diction** What seems interesting about the authors' word choices? Is the language full of jargon? What percentage of the words are too technical for you to understand?
6. **Sentences** How do the various word choices converge to create sentences, simple or complicated, long or short?
7. **Tone** How formal or informal is the language? What are some strategies the authors use to establish the tone?

Exercise 5.10 Analyzing a Student's Style in the Social Sciences

The following passages were written by a junior nursing student. Nurses must sometimes write about topics that are typical of the social sciences (we will study the writing of nurses in Chapter 12). The paragraphs in this exercise are from a paper about postoperative treatment of people who have undergone amputations. In particular, these paragraphs are on the diagnosis and treatment of grief in amputees.

Analyze these passages for the same items that you examined in Exercise 5.9, answering the same questions about nouns, pronouns, verbs, modifiers, diction, sentences, and tone. In addition, indicate what seems to you especially well written (cite specific sentences or groups of sentences and your reasons for thinking they are good) and what you would change (revise sentences or groups of sentences and say why you think your revisions are called for). Finally, you should correct any faulty grammatical constructions.

> Often patients with an amputation are improperly diagnosed as having ineffective coping mechanisms. In actuality they are often going through the grieving process, which can lead to ineffective coping if not properly dealt with. Grieving the loss of a limb is a normal process that the majority of amputee patients experience, and when planning care, nurses must take this process into careful consideration. According to Williamson (1992), the areas to assess with grieving include the contributing problem, the patient's cognitive status, coping skills, family or social support, and the patient's perception of the impact of the loss. The nurse needs to keep all these things in mind when carrying out various nursing interventions to effectively help the patient move through the grieving process.
>
> The best nursing intervention for such a patient is to be supportive and allow the patient to express his or her feelings and concerns. The nurse should use active listening to allow patients to verbalize their grief but also provide privacy for individual expression of grief. The nurse can offer encouragement concerning rehabilitation, provide information about support groups, and assist the patient to become increasingly independent while moving through grief.
>
> Additionally, nurses can make referrals to another professional, such as a social worker or psychologist. A nurse must also offer care to the family of the amputee, as they too will be a vital part of the recovery process. When implementing the various nursing interventions to help a patient through the grieving process, the nurse must offer continual support to both the amputee and family.

Exercise 5.11 Tone and Style in the Social Sciences

The following passages come from a report written by a senior psychology major. She conducted discussions with groups of students from each of several disciplinary groups and then wrote a report that was included in a larger report on the all-college writing program at my school. This larger report was submitted to the faculty and administration for the purpose of apprising them of the status of the academic writing program and enabling them to vote on recommended changes. The author therefore wrote for an audience of faculty members and administrators. She used a modified IMRAD organization, typical of papers that she had learned to write in her major classes. Her style was the product of both her training in her major and her awareness of her audience.

Analyze the style (examine nouns, verbs, and so on, as in Exercise 5.9) and explain how the report's tone is effective for its audience and purpose. Also explain, as specifically as possible, how its tone is or is not typical of that which we have discussed in the preceding section on style in the social sciences.

The paragraphs here reproduce the Introduction, Methods, Summary, and a small part of the Results and Discussion.

A Report on Student Perceptions of Writing

INTRODUCTION

Writing in college, whether term papers, essays, book reviews, or journals, often receives a collective groan from the student body, followed by stress and procrastination, finalized by long nights spent in the library or in front of the computer where the dreaded struggle to create a finished product takes place. Yet college students themselves admit that whatever transpires during those agonizing hours eventually produces one of the most cherished skills acquired during the college career: writing. In recognition of this fact, both the faculty and the student body should work together to continually reshape and improve the writing program of the school for the maximum benefit of the students. However, this task involves several steps, not the least of which is assessing the opinion of the students themselves.

METHODS

A series of focus groups, led by and consisting of students, discussed three important components of the writing program: learning to write, writing to learn, and writing across the curriculum. Each focus group represented one of three major concentrations at Calvin: the arts and humanities, the social sciences, and the natural sciences. The students discussed the process of learning to write, the skill of using writing to learn, and the importance of writing across the curriculum. The opinions and ideas obtained from these focus groups will help provide some of the information necessary to evaluate and ameliorate the writing program at Calvin College.

RESULTS AND DISCUSSION

The Social Sciences—Writing Across the Curriculum

Despite their relatively narrow focus on a single major within social sciences, the students remain cognizant of the importance of writing across the curriculum, realizing its malleability as a tool of any profession. They have also learned how to adapt their own writing to its purpose—creative expression, efficient communication, or brief case history. Compared to other skills learned in college, overall these students rated writing second to oral communication, while at the same time recognizing the co-dependency of the two. In fact, the business students regretted not spending as much time learning to write well as they spent learning to communicate in other ways. Some students admitted that even their W-courses failed to focus on formal writing. They agreed that, "Especially in writing-enriched classes, you can always tell how the professor views writing." Their professors' opinion of writing seemed to have a large impact—both positive and negative—on many students. Furthermore, the content of the social sciences deviates enough from the kinds of writing learned in English 100 that students would like to spend more time reviewing how to shape information to the audience, since that remains as the key to effective communication in this area.

SUMMARY

From the English Department to the Math Department, students rank writing at the top of their list of skills acquired at college. Though they suffer through the hours of creating even a single page, they delight in the improvement observed from paper to paper, year to year. Many of the students involved in these discussions, having come to their final year of college, worry about the state of their grammar or the limited options for writing-enriched courses. They regret that the messages of English 100 were not reviewed and reemphasized from class to class and hope that their writing has not suffered from the neglect. Nevertheless, they also cherish the education they received at Calvin and feel prepared to face the challenges of the future, having already hurdled the obstacles of a good college experience. And yet, hoping that they continue to improve their writing skills well past college, these students anticipate the extension of this learning process regardless of their occupation.

Exercise 5.12 Experimenting with Style in the Social Sciences

Devise a study of some form of human behavior. You could plan to study anything from roommates to people at a mall (I recently read a student paper on why people throw coins into fountains at malls). Pick any subject that is of interest to you. Imagine that you are going to conduct a quantitative study, and write part of your Introduction and part of your Methods. Next, plan to study the same subject, but qualitatively (if you need clarification on the differences between quantitative and qualitative studies, see Chapter 2, page 53 and Chapter 11, page 304). Again, write part of the introduction and part of the body of your imagined study. The parts should each be about five to ten sentences long—roughly 100 words.

By looking at the details of your stylistic choices (nouns, verbs, and so on), compare the styles of your quantitative and qualitative passages. Explain which style you think is better and why.

WORKSHOP 7

Style in the Social Sciences

In this workshop you will consider Marji's questions about style, analyze her paper for the appropriateness and effectiveness of its style, and revise the style of some parts of the paper. If you want to review the assignment for Marji's paper, it can be found in Chapter 2, page 64. You will also need to refer to the complete text of Marji's paper in Chapter 2 in order to complete this workshop.

MARJI'S QUESTIONS ABOUT STYLE

Marji thinks that she "made fewer conscious choices" about style than she did about focus, organization, detail, or format, but she was troubled by uncertainties about whether to write objectively, in a scientific style, or subjectively, allowing her own personality to shape her understanding and explanation of her subject. She was making observations, which she had always been taught were to be objective; but she was observing in order to discuss themes rather than facts, which made her feel justified to do such things as use the pronoun *I*. Here are the concerns Marji noted in her journal:

- I made fewer conscious choices about style than about the other areas. The purpose of reporting observations determined a "Dan did this, Dan did that" style.
- I thought I needed to be formal, but since a human being was my subject, that was difficult.
- After the assignment was changed, I became conscious of and unsure about whether I should use a subjective or objective style, and sometimes I think I combined those styles awkwardly.
- I had a broad audience in mind—whoever might need access to information about the student, including parents; therefore I didn't use much jargon.

ANALYSIS AND REVISION OF MARJI'S STYLE

In this section you will first analyze Marji's style, looking at the specific choices (nouns and pronouns, verbs, modifiers, diction, and sentences) that establish tone—as you did in Exercises 5.9 and 5.10. But here you will also practice revising to improve style—to enhance clarity, to sharpen through conciseness, and so on.

To begin with, read through Marji's paper (Chapter 2, pages 67–72) to get a feel for its tone. Describe the tone generally and explain in what ways it is or is not appropriate for the assignment.

Next, choose three passages, from three different sections of the paper, and examine them for their choices of nouns, verbs, and so on. Ask the questions given in Exercise 5.9. As you analyze the three passages, think about how you would revise them. Begin by citing three or four samples of sentences that you find especially good.

Before revising the three passages, study the following sample revisions of paragraphs from the first two sections of Marji's paper. Read Marji's copy and then the revised version (in order to better assess the Introduction, you should also reread the Abstract, printed on page 67). Explain which revisions you find better than the original. Remember that your judgments about which sentences are better depend on both the quality of the style (which version is clearer, more concise, and so on) and the appropriateness of the style (which version does a better job of following the conventions that the assignment calls for).

Excerpts from Marji's Original Paper

> #### INTRODUCTION
>
> Scott's IQ is 100. Does this number become who Scott is in the eyes of his teachers? Does it tell his teachers the important things there are to know about Scott as a student? Teachers in the field of elementary and special education must have the wherewithal and the knowledge to accurately assess their students' abilities, efforts, and personalities in order to give them the best services and opportunities possible. There is a lot of controversy about the accuracy of assessing students with standardized tests, and therefore researchers are exploring new ways of assessing students' needs and abilities. This knowledge about students is helpful for special service referral and for responsive teaching. It is good to gather this knowledge about both excelling and struggling students. The most effective teachers know their students. I have spent time observing and talking with one particular child during the past month. During this time I have been able to discover more of who he is as a student and, more importantly, who he is as a person.
>
> #### METHODS
>
> In order to gather information about Dan in many different areas of his life, I employed several methods. The first couple of days of my research

> I observed Dan in a formal learning environment. I took field notes on what he was doing during direct instruction time, group work, and individual seat work. I tried to pay attention to his physical mannerisms and verbal contributions. I also observed Dan on the playground and during the lunch period in order to understand his social interactions. After gathering my observation notes together, I developed some interview questions in order to fill in some of the details and answer some questions about which I had been wondering. Next, I examined some of his formal writing. Finally, I looked at the nine-week teacher and student evaluation of his progress and a sociogram which was completed by all students in the class.

Revised Version

> INTRODUCTION
>
> An IQ number often shapes a teacher's impression of a student. But does that number convey the knowledge that will enable a teacher in elementary or special education to accurately assess their students' abilities, efforts, and personalities and thus to give them the best services and opportunities possible? Controversy about the accuracy of assessing students with standardized tests is driving researchers to explore new ways of assessing students' needs and abilities. The knowledge gained should improve both special service referral and teaching.
>
> During the past month I practiced the kinds of information-gathering techniques that could improve our ability to assess students. I observed and talked with one particular child and was able to discover something of who he is as a student and, more importantly, who he is as a person.
>
> METHODS
>
> Employing several different methods of gathering information allowed me to assess Dan in many different areas of his life. The first two days I observed Dan in a formal learning environment, taking field notes on what he was doing—including physical mannerisms and verbal contributions—during direct instruction time, group work, and individual seat work. I also observed Dan during informal play on the playground and the lunch period, noting his social interactions. After studying these observations, I developed interview questions in order to fill in some of the details and answer questions that my observations had generated. Next, I examined some of his formal writing and, finally, the nine-week teacher and student evaluation of his progress and a sociogram which was completed by all students in the class.

Now revise the three passages that you selected.

Questions for You

Reconsider Marji's list of questions about style. Select one or two that you find important or interesting. Do you think Marji answered these questions (by virtue of the choices she made in writing her paper) well? If not, how would you have answered them differently? What questions about style would you add to Marji's list?

BUSINESS

As we begin this section, we move away from the academic writing styles that have been the focus of the last three sections and toward what some call "real world" writing. Your teachers in business classes do, of course, read and publish articles in academic journals, but writing assignments in business classes often follow models from the business world rather than the academic world. A friend of mine, for instance, has her marketing students write marketing reports for real businesses in our community.

At this point I also want to advise you: If you are a student in the humanities, natural sciences, or social sciences, the section on business writing does apply to you. As I've said before, the comparisons to different styles will help you to understand style in your field. Further, you should read this section carefully because you will compose business writing regardless of what field you enter. You will write letters, memos, and reports to your supervisors, and you will probably write a lot of these.

Audience and Purpose in Business Writing

The purpose of most business writing clearly differs from that of most academic writing: Businesspeople write to get their audiences to respond, to take action, and to do so by a specific date. An accountant writes to a client to ask for a tax record and needs that record within three days; a manager writes a report that outlines a change in policy and sets up a timetable for the changes; a marketing specialist composes an ad that asks people to buy a new VCR—this week, while it's on sale.

Additionally, these writers often have, or will develop, a personal relationship with their primary audience. Letters, memos, and even reports (some executives use the term *memo* to refer to all but the most formal of reports, thus emphasizing the immediate, personal contact between writer and audience) are written to customers, coworkers, and bosses whom the writer knows or hopes to know.

But the situation for business writers becomes even trickier when their work is read by people other than their primary audience. You write a memo to your immediate supervisor, but he asks his supervisor to read the memo, and she then decides to distribute it to everyone in the division. Or your boss may want to read a letter that you have written to a client—before you send it. Some companies require a supervisor's approval for all letters sent out under company letterhead. Somewhere along the road, your letter could also make it into the hands of lawyers, stockholders, newspaper reporters, and special interest groups.

Further complicating considerations of audience are the many kinds of relationships between business writers and their audiences. For one thing, businesspeople pay close attention to company hierarchy—the power structure. Look at the styles in which a sales representative with ten years' experience at a company writes a request for a meeting with

A sales trainee: Tom, stop by my office right after lunch.

A fellow salesperson: Dave, would you try to give me a call sometime today?

The company sales manager: Mr. Schoen: Would it be possible for us to discuss a new sales idea that I have been working on? Please let me know if there is a time that would be convenient for you.

If we combine what we know about purpose (getting your primary audience to do something) and audience (manipulating personal relationships with a variety of readers), we see why it is necessary to anticipate audience needs with great care. An audience requires both information and the motivation to act as you want them to. And, because that audience does not have the time to read anything that makes unnecessary work for them, they need the information to be accessibly packaged—in clear language and an easy-to-follow format—and the motivation to be convincing.

One additional factor makes stylistic choices in business writing complicated: the great variety of types of writing. It is not that business writers have to think about writing for particular situations more carefully than other writers do, it is just that business writers regularly face more different kinds of situations. Within the first hour of a workday, a businessperson may write a formal letter to a potential customer, jot down three informal memos to coworkers, and draft part of a year-end report to be presented at an annual stockholders' meeting. As we talk about choosing words and creating tone in business writing, we will consider helpful generalizations, but we will also try to learn how particular situations will determine particular choices.

Nouns and Pronouns

Nouns Technical, specialized words—the words that we often think of as jargon—are efficient when used among people who share an understanding of what they mean. Suppose that you are part of a company that rents advertising space on blimps and on the banners that are trailed behind small aircraft that fly over sports parks and beaches. Within your company you might call these forms of advertising "high-altitude media." This jargony noun phrase is useful because everyone in the company knows what it means; in fact, common usage would probably reduce it to an acronym: HAM. Intraoffice communications would be more efficient if everyone used HAM than if you all had to write,

> advertising space on blimps and those banners trailed behind small aircraft that fly over sports parks and beaches.

On the other hand, you would not want to begin a letter to a prospective customer who knows nothing of your company by saying either

> We deal in HAM.
>
> *or* We rent high-altitude media.

In an introductory letter you might prefer,

> We rent advertising space on blimps and small aircraft.

Different audiences call for different styles.

Although a special situation will sometimes call for technical jargon or long noun phrases, business-writing experts generally advise using short, simple nouns and avoiding noun phrases. In the preceding examples, and in virtually all business-writing situations, concrete nouns dominate. Both "HAM" and "advertising space on blimps" are concrete. When a writer's job is to move an audience to action, that writer must be concise and specific, and creating a concise, concrete style begins with choosing specific nouns. (If you are uncertain of what I mean by concrete and specific nouns, see the discussion of those terms in the section "The Nature of Details," in Chapter 10.)

Pronouns I'll get straight to the point here: You should use first- and second-person pronouns in business writing. Remember, business writers are more likely to accomplish their purpose (to move an audience to do something) if they have a personal relationship with the audience. So they use first-person pronouns, *I* and *we*, to establish a personality, a voice. They use the second-person pronoun, *you*, to show that they are aware of the people to whom they write and to involve those people in the conversation that is implied in a piece of writing. Business writers are the only ones among the large groups we've been studying that regularly use direct address—the pronoun *you*. In fact, business letters often begin with a reference to the last personal contact between the writer and the reader:

> Dear Mr. Halflos:
>
> Enclosed is the information *you* requested when *we* spoke together yesterday.

Business writers cut back on the use of first- and second-person pronouns when they write formal documents—to people outside their company or to superiors in their company (you may remember that the assignment for Joe's paper in Workshop 4 stipulates using third person). Some business-writing textbooks advise against using any first- or second-person pronouns in formal writing because they come across as being presumptuous, too bold for the situation. But even when business writers choose to avoid *I*, *we*, and *you*, they rarely opt for third-person constructions like

> The writer of this report believes . . .
>
> *or* One would hope. . . .

Instead, they use company or division names for the subjects of sentences:

> Standale Electronics believes . . .
>
> *or* The accounting division hopes . . .

They try not to sound stuffy or pretentious. Think of the "plain" style of successful advertising campaigns such as Nike's "Just do it."

Business writers do, however, even when writing informally, shy away from excessive use of *I*, *we*, and *you*. Have you ever received a business letter in which a computer has awkwardly inserted your name at several places in a dull form letter?

> We at Piper Loft Manufacturers believe, **Dave,** that you will find our product most satisfactory. Stop by our showroom, **Dave,** and take a look for yourself.

Overusing *I, we,* and *you* can also create a distasteful tone:

> We should get together, you and I, to discuss the plans that I have made especially for you. You will see positive results if we do business. I'm sure you will agree.

This style makes you feel as if some annoying person with bad breath is in your face. As a business writer you should take advantage of knowing your audience—who they are and what your relationship is. Imagine yourself actually speaking to the audience and choose the words that fit the situation.

Verbs

Tense Business takes place in real time. A business decision made last year is not a work of art (though the manager who made it might think it is), so it is not, as in the humanities, referred to in present tense. Business writers use tenses as we do in normal conversation:

> The policy we *adopted* [past tense] last fall *has become* [present perfect] outdated, and we *will change* [future tense] it on January 16.

Active, Passive, and Linking Verbs Business writers almost always prefer active verbs, which can do more than any other stylistic choice to create the energetic, charismatic voice that business writers like. To give you a concrete example, we can study the main verbs in a business report published by a company in my hometown. The document is a marketing device that was sent to prospective customers; it reports the test results of a new advertising medium that the company sells. The last sentence of the document is built on a linking verb—for a conclusive statement:

> ClearTalk *Is* the Most Efficient Way to Reach Your Target Shopper.

All but three of the other verbs in the report (about twenty in all) are in active voice. Look at some examples:

> ClearTalk *generates* awareness.
>
> ClearTalk *improves* the shopping experience.
>
> Shoppers *describe* ClearTalk as helpful in . . .

These short, direct sentences rely on the verbs to paint a picture of an effective advertising medium.

The few passive constructions in the report appear in relatively unimportant sentence fragments that give information about the methods for gathering test data (remember the preferred use of passives in Methods sections in the natural and social sciences). Business writers also use passive voice when they want to deflect attention away from the agent of an action. If someone makes a decision that is questionable, he or she might write, "It was decided that . . ." rather than "I decided that. . . ." You can see how it might be wise to trade the charisma of active voice for the safety of passive voice. You should, however, consider the ethics involved when you use passive voice to deny responsibility.

Mood This is a category that I have not put into the other sections; only in business writing does problematic use of mood often harm a writer's tone. Remember that there are three "moods" in English: indicative—used to make statements ("I'm getting great grades in this class."); subjunctive—used to express wishes, requests, or to make statements that are contrary to fact ("If I were doing as poorly as you, I would work harder."); and imperative—used to make commands ("Turn in your homework on time!"). Sometimes, possibly in an effort to be concise and to use active verbs, business writers use imperative mood excessively:

> Consult the training manual, prepare a report in the prescribed format, and submit it to your supervisor. Check to see that you have completed all forms. On January 23, appear at the training division main office, and submit to an interview.

You see how the tone becomes curt, pushy, and condescending. You would never write like this to superiors or even people at your own level. And even though you might get away with writing to subordinates with this tone, wise business writers know that today's subordinate may be tomorrow's supervisor.

Modifiers

The audiences of business writers expect directness. We all know what it is like to work with a salesperson who beats around the bush when we ask for a price: Stalling creates suspicion. Consequently, business writers avoid using modifiers in ways that too obviously deflect possible criticism or exaggerate claims. Here are some examples of poor business writing:

> This *may possibly* be the *highest* quality item available in your price range.
>
> We are *extremely* optimistic about the prospects for an *extraordinarily* successful self-insurance program that will *far* exceed our expectations.

I cannot help but distrust the writers of those statements, and most of us do not like to do business with people we distrust.

On the other hand, if business writers try to be too direct they can be liable for making false or misleading claims. An accountant who tells a client

> Rearranging your investment portfolio in this way will reduce your income taxes by one-third.

had better be sure about that figure. If the "one-third" is only an estimate, then the sentence should be properly modified:

> Rearranging your investment portfolio in this way will *probably* reduce your income taxes by *about* one-third.
>
> *or* There is a *75 percent* chance that rearranging your investment portfolio in this way will reduce your income taxes by one-third.

In other words, a business writer can be positive without creating grounds for a possible lawsuit.

Diction

The degree of formality of the words you choose in business writing will vary a great deal—from the memo you send to a coworker to the report that you write for the board of directors. In general, however, people in business prefer simple, direct language. Sounding pompous or, at the other extreme, fawning will almost always hurt a writer's image. Even in a very formal situation—writing a proposal to a CEO, for example—language like

> Although one should observe the strictest prudence in appropriating the valuable time of one's chief executive officer, I must presume upon your good will and request that you carefully peruse the attached proposal.

is horrid. A simple "I would be grateful if you would review the attached proposal" would be far more effective.

Business-writing textbooks all suggest using positive terms whenever possible. Choose

> Increase productivity . . .
> *rather than* Do not allow low productivity . . .
>
> We would like to help you meet your payment schedule.
> *rather than* Do not be late with another payment.
>
> We must continue your present salary.
> *rather than* We will not give you a raise.

Because your audiences are almost always people with whom you want to maintain a positive relationship, use stylistic choices to help achieve that goal.

Parallelism One additional category of diction that we have not considered in previous sections is the choice of words that are grammatically parallel. For example, business writers often use bulleted lists (the dots that appear before each of the items in the following list are called bullet points):

Results of production costs for 1992–1995:
- increased layoffs, 1992 and 1993
- deflated capital reserves, 1992 and 1993
- decreased productivity, 1992–1994
- elevated profit margin, beginning 1995

Every group of words in the list is in the same grammatical form. Most importantly, the first word of each item is parallel: *increased, deflated, decreased,* and *elevated.* Parallelism establishes a rhythm that makes the list easy to read. The same list, not in parallel form, becomes awkward:

Results of production costs for 1992–1995:
- increased layoffs, 1992 and 1993
- the deflation of capital reserves, 1992 and 1993
- productivity reductions, 1992–1994
- beginning in 1995, situations that will cause profits to rise

Parallel words are also important in headings. The main parts of a report will stand out if they are each introduced by parallel terms. The main parts of this section on business writing, for example, are "Nouns and Pronouns," "Verbs," "Modifiers," "Diction," and "Tone"—all nouns. If, instead of "Diction," I had written "How Business Writers Choose Words," you might have wondered whether I was introducing a new section, a subsection of "Modifiers," or a tangent.

Business writers carefully choose the best kind of word for each level of heading and subheading (noun, verb, and so on), and they make those words parallel.

Tone

When we listen to the tones of business writing, we notice their great variety. From the memo for a coworker to the report for prospective clients, tones change to convey an appropriate harmony between writer and reader. Use the wrong tone in business writing, and you won't do business. Business writers are therefore adept at choosing when to use or avoid contractions, first- and second-person pronouns, everyday or elevated language, and other tools for creating levels of informality or formality.

Some qualities of tone are almost always heard in business writing. Language that addresses the audience shows respect; it carefully avoids sarcasm, condescension, impatience, and so on. Language that reflects the writer shows integrity; it creates an image of someone with whom the reader will want to conduct business.

Good business writers know that everything they write creates an image of themselves (and this is especially true when an audience who does not know you personally reads a piece of your writing). I often read aloud samples of different people's writing and ask students to write out a physical description of each of the writers. The descriptions demonstrate remarkable consensus: the students broadly agree on the age, clothing style, and occupation of each writer (the one area they always argue about is the writer's sex). The exercise convinces the students that language does create an image, so create a tone that gives you the image you desire.

Another regular feature of tone in business writing is its energetic, upbeat, positive quality. In fact, a positive tone is so much the norm that readers may read neutral language and interpret it as being negative. Look again at the sentences from the report on that new advertising medium:

> ClearTalk *generates* awareness.
>
> ClearTalk *improves* the shopping experience.
>
> Shoppers *describe* ClearTalk as helpful in . . .

The report's author would never write in an explicitly negative tone:

> ClearTalk *does not devalue* the shopping experience.

And even a neutral tone, created by using passive voice and the word *can*, seems rather unenthusiastic, as if the language masks some bad news:

> Awareness *can be generated* by ClearTalk.

In tune with business writing's upbeat character is the directness of its tone. Effective business writers know that time is money, and they don't make their audience waste time reading flabby prose. One business-writing textbook claims that sentences should average only fifteen to eighteen words in length (sentences in the writing of the other disciplinary groups often average in the mid- or upper-twenties). Bulleted lists are another way that business writers make their prose concise and accessible.

The need to make information easily accessible also partially accounts for the heavy emphasis on the visual character of business writing. Visual format (large-font headings, bulleted lists, white space) contributes to the tone of a piece of writing. (In Part 5, "Format," we will have more to say about visual effects in writing.)

Finally, you can give yourself a sense of how business writers create different tones by looking at the advertisements for similar products in various magazines that are written for clearly different audiences. Here's an example. *The Atlantic* is a magazine for educated, issues-oriented readers (its main articles often run over twenty pages). It contains very few food ads (though many ads for expensive liquors), but a recent issue did contain an ad for a cheese. *Woman's Day* magazine, as the title tells us, is written for women, in their daily lives. Its apparent assumption is that women are still doing the bulk of the housekeeping chores in American families, and it is therefore full of short articles on child care, food preparation, and the like. Its pages are peppered with food ads.

Compare an ad for cheese in *Woman's Day* to an ad for cheese in *The Atlantic.* Both feature a picture of the product: "Boursin: *Fromage Ail et Fines Herbes*" in *The Atlantic* and "Kraft Healthy Favorites" in *Woman's Day.* The text in *The Atlantic,* printed over a Renoir painting, creates a tone of elegance. It uses phrases such as "from . . . the finest fromageries," and it concludes by claiming that Boursin cheese is like no other. The text in *Woman's Day* is printed over a picture of a plate of food. Its tone is folksy, using informal language such as "wait 'til you get a taste" and punning that Kraft "favorites" will be your "favorites." The text is also practical, mentioning the amount of fat, calories, and cholesterol. The style of each ad suits its product and audience.

The Boursin ad gives us one final lesson: Poor editing can ruin your tone. When referring to the cheese's taste, the ad copy says, "It's taste . . ." And that faulty use of *it's* rather than *its,* at least for any picky grammarian who notices it, wrecks the tone. The grammatically ignorant cannot be elegant. *Every* word counts.

Exercise 5.13 Analyzing Professional Style in Business

Your first task is to find a sample of professional writing to analyze. This could be examples of writing in the discipline you plan to major in (you might get recommendations from a professor). Business journals or newspapers will offer shorter pieces, from which you could select subsections for close analysis; or your professor may wish to suggest a book or books. Another option would be to find samples of the business writing that your college or university sends to students. Perhaps you have documents from, say, the admissions or business offices of your school. From whatever piece of writing you choose, select a short passage (a subsection or two or three paragraphs, roughly eight to twelve sentences long) from the beginning, middle, and end of the piece.

Study these passages to see how they use the stylistic features we studied in this section. Make your answers as specific as possible, giving exact counts and examples whenever possible.

1. **Nouns** Are there long, complex noun phrases?
2. **Pronouns** How do the authors use *I, you, we, one,* and other pronouns?
3. **Verbs** Are there any verb tenses that do not seem to follow the general guidelines mentioned in this section, and if there are, what might be the reason(s)? How frequently do the authors use active, passive, and linking verbs? Do you find excessive use of imperative mood in any of the samples you examine?
4. **Modifiers** In what ways do the authors tend to qualify the claims they make?
5. **Diction** What seems interesting about the authors' word choices? Is the language full of jargon? What percentage of the words are too technical for you to understand?
6. **Sentences** How do the various word choices converge to create sentences, simple or complicated, long or short?
7. **Tone** How formal or informal is the language? What are some strategies the authors use to establish the tone?

Finally, select one or two paragraphs that seem typical of the style of the samples you are analyzing and compare them to a typical sample from one of the other disciplinary groups studied in this chapter.

Exercise 5.14 Analyzing a Student's Style in Business

The following paragraphs come from a section of the executive summary of a business report written by a senior business major. It was not written for a class but for a college business office; that office hired the student to conduct a survey of various charitable agencies to determine their interest in and experience with endowment funds.

Analyze this passage for the same items that you examined in Exercise 5.13, answering the same questions about nouns, pronouns, verbs, modifiers, diction, sentences, and tone. In addition, indicate what seems to you especially well written (cite specific sentences or groups of sentences and your reasons for thinking they are good) and what you would change (revise sentences or groups of sentences and say why you think your revisions are called for). Finally, you should correct any faulty grammatical constructions.

> AGENCY ATTRIBUTES
>
> The agencies that returned the endowment surveys have been in existence an average of 40 years, operating on an average annual budget of less than $1,000,000. The agencies employ an average of 37 full-time employees and have an average of 19 members on the board of trustees. They all characterize their most recent fund raisers as fairly successful in reaching their goals.
>
> In the past five years the agencies have experienced a loss of United Way, federal, state, and county funds, while an influx of individual

donations and profits from fees for services have helped to balance the loss from other funding. State, county, and city funds were least often cited as contributing significantly to total budgets. Currently, fees for services and individual donations and membership fees are the greatest contributors to agencies' budget. Corporate grants, foundation grants, income from endowments, and United Way were significant sources of income in many cases. Other sources of income not listed on the survey but indicated by responding agencies are sales of goods, special events (e.g., telethons and galas), and church donations. Many agencies pointed out that overall funding has stayed the same over the past five years, but that the cost of operating has increased.

Agency directors, board members, and volunteers do most of the agencies' fund raising. Twenty percent of the agencies have a full-time employee for fund raising. Half of the agencies have donors who contribute significant levels of annual support. Just under half of the agencies have an endowment fund. See Exhibits #5 and #6 and the Survey Results for a detailed analysis of the agencies' budgets.

Exercise 5.15 Tone and Style in Business

Legal writing is a specialized field that differs from any of the kinds of writing that we have studied. Sometimes legal writing serves an important business function—beyond the obvious legal needs of a business. A student of mine once gave me a letter he had received from a company that he worked for. It was a company that sold a line of products through independent distributors rather than in stores.

Legal action against the company resulted in its having to offer its distributors the possibility of severing their ties to the company and returning their merchandise for a full refund. Of course the company did not want them to do this; if they lost all the people out selling the products, they would go out of business. The style of the letter sent to inform distributors of their right to a refund needed, therefore, to present the facts as was required by the court settlement but to do so in a way that discouraged the choice to quit selling the company's product.

The letter is over two pages of very small, single-spaced print, with only half-inch margins. It contains roughly thirty numbered paragraphs, some of which explain the court's decision and some of which explain the process that must be followed to return merchandise. Here are two paragraphs explaining the "Refund Program." The company's name is deleted and is designated by an X. In what ways is the style effective or ineffective?

> Under the Refund Program, X will refund each Settlement Class Member, regardless of his or her present or past position within X marketing program, ninety percent (90%) of each dollar's worth of products

> and sales aids sold by X and purchased within the past three years by the Settlement Class Member from X or a distributor of X's products or X's sales aids, providing that such materials are returned to X in reasonably sound, unopened and unaltered condition. The net refund payable to each Settlement Class Member who returns products to X will be reduced by an amount equal to any commissions paid to the Settlement Class Member on the sales of any product with respect to which a refund is sought and by the amount of any fees and costs awarded to Class Counsel by the Court.
>
> Alternatively, X will refund to any Settlement Class Members who no longer have product or sales aids available to return to X, but who timely submit a Claim Form certifying that their participation in the X marketing program resulted in net economic losses, up to ten percent (10%) of their documented economic loss. The total amount of all such refunds paid to all such Settlement Class Members shall not exceed thirty percent (30%) of the aggregate amount paid to Class Members who return products or sales aids to X for refunds in accordance with this program. A Class Member may submit a refund claim for return of product or sales aids, or for economic loss, but not both.

Exercise 5.16 Experimenting with Style in Business

Think of a job that you have held and of a company policy that you would have liked to change. Think of a new policy and write one version of it for each of two different audiences. You may choose any two of the following possible audiences: your immediate supervisor (imagine that he or she has asked you to write the new policy and submit a copy), a group of people outside of your company who will be affected by the change in policy, the company's board of directors, or a group of employees whose jobs will be affected by the change.

By looking at the details of your stylistic choices (nouns, verbs, and so on), compare the styles of your two versions. Explain how the different choices are appropriate for the two different audiences.

WORKSHOP 8

Style in Business

In this workshop you will consider Joe's questions about style, analyze his paper for the appropriateness and effectiveness of its style, and revise the style of some parts of the paper. If you want to review the assignment for Joe's paper, it can be found in Chapter 2, page 85. You will also need to refer to the complete text of Joe's paper in Chapter 2 in order to complete this workshop.

JOE'S QUESTIONS ABOUT STYLE

Though Joe says he had few questions, he did write about several very important concerns in his journal. At times Joe seems to be a frustrated humanities student. He does not like the "dry," objective style that the teacher stipulated for the report, yet he rarely tries to spice it up. As you revise parts of Joe's report, think about how he follows the conventions of the dry style and how he could have been more lively without violating the guidelines his teacher gave. Here are Joe's questions:

> I found I had few questions going through this paper. We were told to write in third person passive (dry!), and I did little editing. Anyway, here are a few questions:
>
> 1. Is the aim to write a "style-free" paper? Businesspeople allegedly want just the facts—must I avoid all colorful language?
>   - I kept the shamefully unscientific "champagne image" in the "Internal Environment" section of the Initial Situation Analysis because I felt it described the club better than other adjectives. Other times I dropped these descriptions—like referring to Oakton as Burlington's "rich uncle."
> 2. Does the way I'm drawing conclusions and stereotyping for business purposes change my style?
>   - Based on the humanities courses I've taken, I would never *assume* that men play more tennis than women. It feels awkward to write about people as business objects, with so little awareness of individuality.
> 3. How do I report data without getting so boring that even the boss gets tired of it?
>   - I chose more eye-appealing formats than paragraph form (bullet points, color, large paragraph indents, etc.).
>   - I summed up the differences in very direct sentences: "In general. . . ." I thought this might cut to the chase a bit.
>   - Paragraph 2 of the "Results" section was the hardest to write—I had a lot of data to condense, so I chose the most *important* data and tried to give a play-by-play interpretation ("Apparently the respondents are most concerned . . ." / "Thus, respondents as a whole . . .").
> 4. Passive voice?
>   - I used this as an excuse to be lazy—and it shows! Check out the methodology paragraph: "the use of observation . . . was employed." Yuck! Don't you love the redundancy? (use/employed.) It's better than "I used . . ." or "the author used . . . ," but it still

sucks—I'm sure I could've been more creative everywhere—like before the bullet points, "significant data *may be studied*"—it feels so *cheap!*

- I sometimes used passive voice as an escape from giving detail, as in "Burlington is considered." I'll explore this more in the detail section.

ANALYSIS AND REVISION OF JOE'S STYLE

In this section you will first analyze Joe's style, looking at the specific choices (nouns and pronouns, verbs, modifiers, diction, and sentences) that establish tone—as you did in Exercises 5.13 and 5.14. But here you will also practice revising to improve style—to enhance clarity, to sharpen through conciseness, and so on.

To begin with, read through Joe's paper (Chapter 2, pages 88–95) to get a feel for its tone. Describe the tone generally and explain in what ways it is or is not appropriate for the assignment.

Next, choose three passages, from three different sections of the paper, and examine them for their choices of nouns, verbs, and so on, asking the questions given in Exercise 5.13. As you analyze the three passages, think about how you would revise them. Begin by citing three or four samples of sentences that you find especially good.

Before revising the three passages, study the following sample revisions of paragraphs from the third section of Joe's paper. They include some passive verbs that Joe seems to dislike writing, but the descriptive purpose of this section would seem to give Joe an opportunity to write with the energy and creativity that he enjoys. Read Joe's copy and then the revised version. Explain which revisions you find better than the original. Remember that your judgments about which sentences are better depends on both the quality of the style (which version is clearer, more concise, and so on) and the appropriateness of the style (which version does a better job of following the conventions that the assignment calls for).

Excerpts from Joe's Original Paper

> INITIAL SITUATION ANALYSIS
>
> *Methodology*
>
> For the purpose of analysis, the use of observation (and subsequent inference) was employed. Observed were the physical characteristics of Schwartz's patrons' characteristics and its community reputation.
>
> *External Environment*
>
> Schwartz's is one among several tennis clubs in the south suburbs of Burlington. Although none of these other clubs is within a mile radius

of its setting in the heart of Oakton, Schwartz's must compete with tennis clubs of the neighboring suburbs, which can be conveniently accessed by the major roads. It is a perfectly competitive environment.

Economically, the city of Burlington is considered an area of high potential for businesses. There seems to be economic growth both downtown and in the suburbs, as buildings go up and businesses boom. Unemployment is also on the decline in the Mimi Valley. With its location in the affluent suburb of Oakton, Schwartz's is nestled in among the lavish estates of Burlington's old-money families, which contributes to the steadiness of customer buying power and economic opportunity.

Revised Version

INITIAL SITUATION ANALYSIS

Methodology

Observation (and subsequent inference) of the physical characteristics of Schwartz's, its patrons' characteristics, and its community reputation provided the basis for analysis.

External Environment

Schwartz's is one of several tennis clubs in the south suburbs of Burlington. Although none of these other clubs enjoys Schwartz's setting in the affluent suburb of Oakton, Schwartz's must compete with clubs of the neighboring suburbs, which can be conveniently accessed by the major roads. It is a highly competitive environment.

The city of Burlington exhibits high business potential. During the past five years, construction in both the city and the suburbs went up 15 percent, corporate profits rose 8 percent, and unemployment decreased from 5.3 to 4.1 percent. Schwartz's has experienced consistent profits. Being nestled in among the lavish estates of Burlington's old-money families contributes to the steadiness of economic opportunity.

Now revise the three passages that you selected.

Questions for You

Reconsider Joe's list of questions about style. Select one or two that you find important or interesting. Do you think Joe answered these questions (by virtue of the choices he made in writing his paper) well? If not, how would you have answered them differently? What questions about style would you add to Joe's list?

6

Adaptations: Style

Now that you are aware of some conventions of style and tone in the various disciplines, let me begin this chapter with the assertion that no writer always makes stylistic choices completely within any set of conventions. In fact, one of the reasons for ending the preceding chapter with writing in business is that businesspeople are always adapting styles to meet the needs of various situations. You may remember, for example, that the report on the advertising medium, ClearTalk, used passive voice to explain its "methods." All writers go beyond the traditions of their fields—sometimes modestly stretching traditions, sometimes radically importing devices from other traditions, sometimes creating a hybrid that suits a unique situation, and always adjusting to the constantly evolving traditions of the disciplines.

Exercise 6.1 Adapting Style

It would be best for you to work on Exercise 6.1 as you read through this chapter. Read the instructions for Exercise 6.1 (page 191) now.

REASONS FOR STYLISTIC ADAPTATIONS

Before we get into examples, we must first realize that adapting arbitrarily, just for the sake of doing something different, is foolish. All stylistic choices should be reasonable; in other words, you should have a clear reason for every choice you make.

Audience

Writers from all fields must occasionally make nontraditional stylistic choices because they write to nontraditional audiences. For one thing, everyone writes business letters to individuals outside of his or her field, and the style of a business letter should be businesslike. A letter from a botanist to an accountant may be inappropriate if it is written in the style of a scientific article. However, if a botanist were to write a business letter to another botanist, the style could well be a mix of conventions from business and natural science. We also write for nonprofessional audiences—for a church or civic publication, a speech to a class of fourth graders, or an alumni magazine. The stylistic choices that are expected by professional colleagues could seem pretentious or incomprehensible to those audiences.

Recall the precise, technical language of professional publications in the natural sciences; then read the following two sentences from what is called "popular science." The first is from the preface to a book, *Life at the Edge,* that was given to people who subscribed to *Scientific American.* The readers of this magazine include many nonscientists, but they are also people who are generally knowledgeable about science. Listen to the mixture of technical and nontechnical diction and the hybrid tone that the mixture creates:

> Finally, we will enter the most dangerous and eerie world of all, that of the obligate parasite, totally dependent on its unwilling host for sustenance, avoiding or even exploiting defenses erected specifically to guard against parasitism. (Gould and Gould ix)

Words like *obligate parasite* draw the audience into the realm of science, and the phrase *most dangerous and eerie world* employs the charisma of a novelist's language to introduce the story of these parasites to the audience. The authors also use the pronoun *we* to refer to writers and readers together—a practice never seen in the professional journals of the natural sciences but here a perfectly reasonable technique for making the readers feel at one with the scientific community and the wonders of nature.

A second example comes from a collection of essays by Albert Einstein, *Out of My Later Years:*

> We might say that the principle of the conservation of energy, having previously swallowed up that of the conservation of heat, now proceeded to swallow that of the conservation of mass—and holds the field alone. (51)

When he wrote to other physicists, Einstein explained his theories in a style that depends heavily on the language of mathematics; here, for his general audience, he uses a metaphor from nature: the preeminent principle of the conservation of energy "swallows up" lesser principles of physics.

Writers in the humanities also adapt conventions of style for popular audiences. Let's read two selections. Each is from a review of the movie *The Last Temptation of Christ* (a controversial movie released in 1988), each is written by the same person, and each makes the same point. The first was written for a publication that is read primarily by college professors and other intellectuals associated with a group of "Reformed" Christian denominations. The second appeared in a magazine read by a broad spectrum of people in one denomination:

> When Jesus confesses his wrong to Mary Magdalene, it is less for any clear moral offense, like lust or concupiscence, than for the pain that his solitary and celibate calling inflicts upon her. (Anker, "Finding" 20)
>
> Jesus, too, recognizes the cost of his calling on others around him, namely his mother and Mary Magdalene. . . . To do what he has to do demands that he reject lasting closeness to them, a price that pains them all. (Anker, "Last" 27)

The first sample is a grammatically complex sentence that culminates in the rich alliterative language—"solitary and celibate calling"—that your English teachers praise. The second is more plain and simple, breaking the idea into two sentences and avoiding words, like *concupiscence,* that might seem showy to the audience.

Even within a narrowly defined discipline, audiences of individual journals may favor particular styles. Howard S. Becker tells of becoming the editor of *Social Problems* and trying to make it a journal that was "somehow different from the 'establishment'" journals in sociology (we will look at an example of Becker's writing in *Social Problems* later in this chapter).

Exercise 6.1 Adapting Style (continued)

Write two new versions of one paragraph from a paper that you have recently written. If you have not yet written any college papers, you may use one of the papers found in Workshops 1 through 4. Write the first revision of the paragraph to an audience of people outside the discipline of the paper (in other words, if the paper was written for a class in the social sciences, rewrite the paragraph for people in the natural sciences, humanities, or business) and the second revision to a general, "popular" audience.

After writing the paragraphs, ask yourself: Do the styles of the two paragraphs differ much? Does writing as a historian to natural scientists, for example, call for any different stylistic choices than writing as a historian to a general audience?

Purpose

Another reason for creating stylistic adaptations is to better accomplish a particular purpose. As we mentioned in the section on writing in the natural sciences, review articles are more personal in style than reports of original research because their purpose is more interpretive—similar to that of writing in the humanities. Greg Myers says that the writer of such a review "shapes the literature of a field into a story in order to enlist the support of readers" (Myers, "Stories and Styles" 45). According to Myers's analysis of a review by Francis Crick, Crick implicitly says to his audience: "Believe my evaluation of the state of the field and aim your research in the important direction that I have mapped out." Of course, as Myers also shows, Crick's extraordinary reputation (he is the person who, with James Watson, proposed the double-helix model of DNA) allows intrepid interpretation of the field of molecular biology (I'll say more about the influence of reputation on style, and show you some examples from Crick's review, in a few moments).

Let's say that your purpose is to present an idea that is new in your field, but you are afraid that people may not recognize its novelty. You could use a nontraditional style to emphasize the novelty. On the other hand, if you wanted to tone down the glaring claim of a bold new idea, you might want to mask its radical nature by presenting it in a nonthreatening, traditional style.

Occasionally a writer in one field conducts work that is typical of work in another field. People trained in English, for instance, sometimes carry out quantitative studies to measure the effectiveness of a teaching strategy, the kinds of revisions students make, and so forth. Given the "scientific" purpose of these studies, the writers look for stylistic models in the social and natural sciences rather than the humanities. A journal called *Research in the Teaching of English* is filled with articles written in a style that follows many of the conventions we saw in the social and natural sciences. The articles contain sections on materials and methods (though the terminology used to designate these sections can be more varied than it is in most scientific journals), and these sections are typically written in the passive voice. The same English teacher who taught you to abhor passive voice may write sentences like

> Students were randomly selected [passive voice] from a pool of twenty-nine first-year composition classes.
>
> *or* The following analytical tests were administered [passive voice] to the type A students.

Even an art critic who seeks an objective, scientific voice may use stylistic models from scientific writing to accomplish that purpose.

Since the array of different purposes is, of course, unlimited, so is the variety of stylistic choices. Look at an excerpt from a short essay by a famous sociologist, Robert K. Merton, and guess his purpose.

> In approaching the subject we are about to examine, then, we must, if we are to do justice, bend our every effort to the difficult task of seeing things whole, of giving attention where attention is due, and of not permitting ourselves to focus on the insignificant at the expense of the significant. For, in the end, significance is all. In a sense, we owe it to ourselves to recognize this and to keep it ever in mind. True, most people, most of the time will freely admit that the significant subject is to be preferred to the insignificant. But even when they admit it in so many words they do not always act in accord with what they say. That is especially apt to be the case with the subject in hand. And so, without further ado, we turn to our examination of the subject.
>
> But first, . . . (99)

The title of Merton's essay is "Foreword to a Preface for an Introduction to a Prolegomena to a Discourse on a Certain Subject." His purpose—to lampoon some academic writers for their inability to get to the point—embraces the horribly verbose, pretentious style that he uses.

Exercise 6.1 Adapting Style (continued)

First, make sure that you understand the *purpose* of your paper (you're still working with the paper that you used for the first part of this exercise) as it now stands. Write out a short explanation of purpose. Now decide on a change in purpose: Without changing the ideas and information, you can now propose to *interpret,* to *persuade,* to *summarize,* to *spoof*—use your imagination. Rewrite the opening paragraph of the paper to reflect the change in purpose.

After rewriting, analyze the stylistic changes that you made and your reasons for making them.

Voice

Different authorial voices also affect stylistic choices. A writer's reputation, as we mentioned earlier, can influence style. A person who is highly respected will choose a style that is not as self-effacing as would someone with no reputation. An unknown person has to keep himself or herself out of the picture. But famous people use their reputation rhetorically: they present the ideas *of someone,* doing so to help convince the audience that the ideas are worth listening to. Earlier I referred to a review article written by

Francis Crick. In Myers's study of that article, he compares it to another review article by a lesser-known scientist, Darnell, and shows how much more personal is Crick's style. According to Myers,

> The syntax and cohesion in Darnell's [the scientist of lesser reputation than Crick] article suggest the impersonality of the reader-writer relation, while everything in Crick's article suggests an interaction between people. ("Stories and Styles" 56)

Myers then cites the opening sentences of the two articles:

> *Darnell:* For some years evidence has been accumulating that messenger RNA (mRNA) formation in eukaryotic cells is substantially different and more biochemically complex than in bacteria.
>
> *Crick:* In the last two years there has been a mini-revolution in molecular genetics. When I came to California, in September of 1976, I had no idea that a typical gene might be split into several pieces and I doubt if anybody else had. (56–57)

Crick rejects the convention of scientific impersonality in favor of the personal, narrative style of an essayist because he knows that his audience is interested in *his* story. His voice helps him to accomplish his rhetorical purpose.

I have also mentioned sociologist Howard S. Becker several times, and his career gives us another example of the relationship between reputation, style, and voice. In an article written in 1956, Becker (and his coauthor, James Carper) wrote sentences like the one quoted in Chapter 5:

> The data on which this study is based were gathered in the course of a study of the genesis of identification with an occupation in students doing graduate work in physiology, philosophy, and mechanical engineering.

But thirty-three years later, and writing in a journal (*Social Problems*) that he has edited, Becker's style shows remarkable changes:

> You could say that science requires continual vigilance. . . .
>
> I would say that myself. . . .
>
> It looks to me like the literature cited. . . . ("Comment" 315)

I must point out that these sentences appear in a brief "Comment," a response to something written by another scholar, and that type of writing is less formal than most academic writing. But the powerful personality, the strong sense of relationship between himself and the reader that Becker creates with his word choices, reflects a voice that has made a clear departure from tradition.

I do not, however, believe that only famous people enjoy such stylistic freedom. Students often create successful stylistic hybrids (by "successful" I refer to papers that get good grades). I suppose a number of reasons could account for this. Instructors may recognize that their students have not yet learned the conventions of their discipline and therefore may not feel right about requiring students to write in styles that they do not know. It could also be that some teachers resent the oppression of stylistic conventions and try to release their students from those constraints. Finally, teachers may want students to learn that different situations call for different styles, and they try to teach this principle by encouraging stylistic variety. You may remember our earlier reference to Ann, the student who is studying psychology in graduate school. Some of her professors (not all, and not even the majority) praised her for using a personal, descriptive, and narrative style that violates the conventions in the field. Those who praised Ann understood her reasons for the stylistic choices she made. The point: Create stylistic adaptations when and only when you know the reasons for doing so.

Exercise 6.1 Adapting Style (continued)

Once again, I'd like you to use your imagination—to conceive of a change in your *voice*. Of course, changing *audiences* often means changing your voice because you have a different relationship with each different audience, but now try a whole new personality or identity. You could be a great old sage, a young rebel, a character from the past—anything. Rewrite two or three paragraphs in your new voice.

Analyze the revisions: What did you change and why?

EXAMPLES OF EFFECTIVE ADAPTATIONS

To begin with, let's remember that nonconventional, hybrid styles are common. Listen, for example, to the narrative in a short essay by Jared M. Diamond, published in the "News and Views" section of the eminent science journal *Nature*. He is writing about the environmental destructiveness of ancient civilizations, and his style relies on vivid and emotionally charged modifiers and active verbs:

> [The people on Easter Island] destroyed the forest so completely that its tree species are now extinct. . . . By the time the Europeans discovered Easter Island, they found a panorama of destruction. . . .
>
> The Anasazi . . . inflicted fatal blows on the fragile desert environment. (19–20)

We also see cases in which a writer stretches the stylistic conventions of a discipline. K. R. Popper, for example, takes the personal style of the humanities to a delightful extreme in the introduction to an essay on the Greek writer Parmenides. Listen to the way that the whimsical tone of the title, "How the Moon Might Throw Some of Her Light upon the Two Ways of Parmenides," carries into this scholarly piece:

> I first met Parmenides [when] I was 15 or 16 years old, and I was overwhelmed by the meeting. . . . Since that day . . . , 74 or 75 years ago, I have never looked at Selene [one of Parmenides's characters] without working out that her gaze does indeed turn toward Helios' rays. . . . And I remember Parmenides with gratitude. (12)

Popper combines his personal narrative with the critic's tradition of treating literary characters as if they are alive in the present, and he creates a wonderfully apt style.

Review articles in science, as we've noted before, generally have a more personal tone than reports of original research, but well-known biologist James L. Gould plays that strain loudly in a review article, "The Map Sense of Pigeons." Gould is trying to focus attention on the most plausible theories. At the beginning of the second paragraph he wants to imply that not all the theories proposed are plausible, so he writes,

> Aside from [the pigeons'] reading the minds of the experimenters (a possibility which has not escaped investigation), there are only three basic explanations for the remarkable ability of pigeons to home. (205)

The playful tone forcefully makes the point: Only three theories are worth talking about; the rest are crazy.

Titles usually follow disciplinary traditions. Historian Robert Hughes creates the clever chapter title "A Horse Foaled by an Acorn" in his book *The Fatal Shore*, and biochemist Robert T. Chatterton, Jr., and colleagues provide the appropriately concrete and specific title "Indomethacin Inhibition of Estradiol-Induced Lactogenesis" for a paper in the *Journal of Steroid Biochemistry*.

When stylistic conventions are strong, as they are for scientific titles, the departures from convention seem especially loud. Imagine how the following examples must have sounded to the scientists who encountered them in scientific journals. "Why Fruits Rot" is a catchy and unusual title by biologist Daniel Janzen, and I especially like his "How to Be a Fig," a review article that does exactly what the title says; it classifies (one of the main activities of natural science) figs, showing what the "900-odd species" of fig have in common.

As you read materials for your course work, try to keep track of pieces of writing that seem stylistically unusual yet effective. Examine the reasons for the writers' choices. Imitate unusual styles that you like only if you can explain *your* reasons for choosing them.

CAUTIONS

I know that my warning—avoid arbitrary adaptations when you make stylistic choices—is becoming repetitious, but I think there is good reason for my emphasizing it. One of the helpful things about traditions is that they provide models, and when we are just learning the ropes in a field, we naturally rely on models to guide us. When we start modifying models, we run the risks of creating hybrid monsters and of losing all sense of direction in our choices. Barbara Walvoord and her colleagues found that students could become confused by hybrid forms. In a psychology course, students were asked to write a letter in which they offered counseling to a friend. The teacher thought that a letter would be easy for students to write, but students had trouble creating an appropriate tone in their letters because the "hybrid form . . . had to sound something like a letter to a friend yet adopt the counselor in training role and meet the academic expectations of the teacher" (165).

Professional writers can also become confused when they cross traditions. The author of an article from *Research in the Teaching of English* jumps back and forth between the passive, objective, scientific persona typical of writing in the sciences and the active, first-person presence of writing in the humanities. In the following sentence she uses passive voice to explain that the children she studied

> *were pooled* by grade, and the sample students *were* randomly *selected* from this pool. . . .

But, in the very next sentence, she shifts to active verbs,

> I *visited* the classrooms . . . where I *observed* and *participated*. . . .

Later, she says, again in active verbs,

> I *greeted* [the students] and briefly *told* them about the study.

then shifts back to a passive verb in the next sentence:

> They *were told* that they could choose. . . . (Purcell-Gates 134)

The shifts in voice create a somewhat uncertain tone and even make us wonder if some unknown shadowy characters were helping with the study.

Enough said?

A LITTLE GOES A LONG WAY

While writing this chapter, I asked people to give me names of favorite writers in their fields. The responses usually sound something like this: "I really like ___, but I wouldn't say that she's typical of writers in my field." In other words, the nontraditional stylists are often (if not usually) the writers that people most enjoy reading. Many things could account for that. It could simply be that the best writers are those rare, brilliant people who have established great reputations and can therefore afford to bend the rules. But the point I want to make is that these favorite writers, these nontraditional stylists, do not write much differently than their peers. That is to say, we can usually recognize their work as that of sociologists or physicists or whatever they happen to be.

Why do slight variations from traditional stylistic choices seem radical? People in the professions and disciplines read a lot. So they become habituated to the conventions of style that they read in their fields, and even relatively minor variations catch their attention. Even though adaptations are, as I've said before, fairly common, they are not as common as the conventions; they are not what people expect.

The experience of Ann, our friend getting a master's degree in psychology, again illustrates the point. According to her, "The 'proper procedure' for beginning the background information section of a report [her example comes from a personality appraisal] would be something like 'William is an eleven-year-old white male of average height and weight.'" But Ann's appraisal of William begins,

> William is a blond-haired, eleven-year-old fourth grader who appears to be shy and lacks confidence around people he does not know well.

The content of that sentence is not that unusual in a personality appraisal, which is a relatively subjective type of writing. But the way Ann begins her report seems to throw her subjectivity in the reader's face. The language immediately bangs out a subjective tone, and the reader—Ann's teacher—thought that she should try to maintain an objective tone even though the content is subjective. Ann was therefore graded down.

Do not, however, assume that Ann's rebellion against tradition pervades her whole essay. She does not rely on all, or even many, of the standard devices for creating a subjective, personal style. Not once in the personality appraisal or in any of her papers that were criticized for "reading too much like a novel" does she use first-person pronouns *I* or *we*, the second-person pronoun *you*, or contractions. She does conform to the conventional use of passive voice, especially in her methods sections, and she uses a good deal of technical jargon. Her "rebellion" consists of using descriptive modifiers ("blond-haired" and "shy"), a relatively large percentage of active verbs, and logical connectors like the word *consequently* (later I'll explain why she was criticized for using that word).

You see how small departures from tradition can cause a strong response. As you read in your field, you will be influenced most strongly by the dominant conventions. They are the safe, reliable choices; they have become standard, in most cases at least, for good reasons. Remember, however, that playing it safe can sometimes be dangerous. If you always choose the standard options, you will dull your sense of the uniqueness of each writing situation, and you may even dull yourself.

Exercise 6.1 Adapting Style (continued)

Change the audience, purpose, and voice (or some combination thereof) of a paper that you wrote for one of your classes, preferably in your major. Make changes to create a situation that is somehow not typical of the types of writing in your field. The suggestions in the earlier parts of Exercise 6.1 should help you to decide what to change.

1. Submit the original and revised versions of your paper.
2. Explain why you revised as you did; in other words, explain the reasons for your new stylistic choices.
3. How has your tone changed?
4. What, if any, nontraditional stylistic choices did you make? Justify those choices by explaining your reasons for making them.
5. On your revision, underline all the sentences that you think are better than they were before revising (thinking about stylistic options should help you to improve sentences even if you do not change the basic style or tone).

Part Two Conclusion

Let's consider Ann's experience one last time. Who was right, Ann or the teachers who criticized her? I am asking a version of the question I raised in the "To the Student" section at the beginning of this book: Where does the "sacredness of obedience" end and the "sacredness of rebellion" begin? When should we stop obeying inherited tradition and create new stylistic choices, adaptations? In writing, the answers to all questions of right and wrong, good and bad, traditional or novel depend on individual situations. Ann may have been "right" to use subjective, descriptive language for the teacher who praised her; he understood the reasons for her choices. He agreed that, as Ann put it, "Reports ought to reflect the uniqueness of each child. People who read these reports cannot possibly respect a child's individuality through canned reports." But Ann may have been wrong to use connectors such as *consequently* (I told you I'd get back to this). She appears not to have understood the instructor's reason for wanting her to avoid this connector. Here is the pair of sentences in which *consequently* was used:

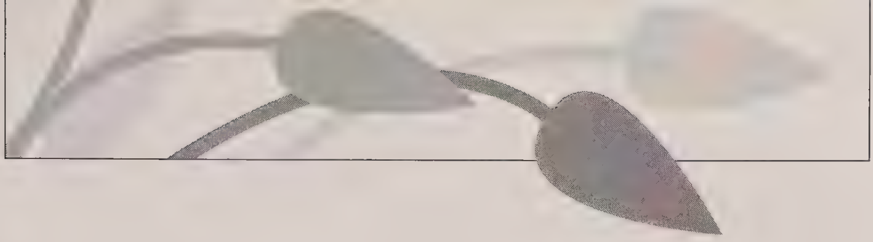
> William's mother appears to put expectations on him that he is virtually unable to achieve. Consequently, his mother wins, and William sees himself as a failure.

Using *consequently* assumes a cause-and-effect relationship between the expectations of William's mother and William's poor self-image. A psychologist making a preliminary report on a child should avoid jumping to conclusions about cause and effect; many other conditions could have contributed to William's self-image. All the psychologist knows is that William's mother sets high expectations and William has a poor self-image, and that is probably how the observations should be written.

In one of her ideas Ann is clearly right. She says, "I continually have to remind myself that I am learning to write for the child and parent and not for my profs." She recognizes, in other words, that her choices will ultimately depend on the unique conditions of each situation, of each audience and purpose.

So we come back to what is by now a familiar refrain: Choose a style and tone for good reasons, not just to be different. And, since the personal style is often presented as the better alternative to traditional academic style, I think it is worth suggesting that the personal style has been lately preached so loudly that it has become another tradition: People can follow its conventions as slavishly as they do any conventions.

Finally, remember that any traditional models you inherit or any adaptations you create can be handled well or poorly. Sentences with passive verbs can be good or bad, and sentences with active verbs can be good or bad. If you respect yourself, your audience, and your purpose for communicating, you should also respect the importance of every word in every sentence and create an effective style and tone for each unique piece of writing.



PART THREE

Organization and Coherence: Arranging and Connecting the Parts

IMAGINE THAT THIS BOOK IS NOT BOUND, THAT ITS CHAPTERS AND pages have not been arranged for you. Imagine instead that it comes in a box full of unnumbered, randomly ordered, loose-leaf sheets. You could then organize it any way you chose—maybe just toss the sheets up in the air and trust to fate. Trying to read such a book would be insane. The example is extreme, but it captures the feeling of helpless confusion and frustration a reader endures when slogging through an unorganized piece of writing. Writers must therefore construct careful, purposeful organizational plans, and to do that they answer these essential questions:

- How *many* main parts will I have?
- How will I *arrange* those parts?
- How will I *connect* the parts?

However, typical answers to these questions vary from discipline to discipline. Because writers and audiences in various disciplines have different ways of thinking and different purposes for communicating, they have developed traditions for dividing, arranging, and connecting the parts of their writing. Chemists expect to see conventional headings announcing the principal parts—almost always arranged in the same order—of a scientific paper. Music critics expect no headings, but when they come across a concise statement of the thesis, they know that they have arrived at the end of the introduction of an essay.

Because the organization of a piece of writing provides a quick and effective way to detect its logic, organizational plans that cross-breed disciplinary traditions can be powerful tools for adapting to the unique requirements of a nontraditional rhetorical purpose. If a paper about a novel is organized like a scientific paper, that paper boldly announces its break with tradition and red-alerts readers to its unusual purpose.

Most importantly, though, readers fully understand a piece of writing only if they can comprehend its organization. Many studies have shown a direct correlation between ability to follow a basic organization of a piece and to comprehend it. Writers who fail to organize effectively make it enormously difficult for their readers to understand them. Writers who make themselves easy to follow, whose organization carries readers on a fluid journey from beginning to end, are—almost without exception—successful writers.

7

Fundamentals: Organization and Coherence

Though writers often make outlines before they begin to write, organization is not something that should be imposed from the outside. It must grow out of basic considerations of audience and purpose, and it must convey a paper's unique structure of thought; only by accomplishing that goal can a paper hope to be coherent. This chapter introduces some basic ideas about and models for organization and coherence, but perhaps the most fundamental point is that you must consider options for organizing a paper just as you do for writing a sentence. There is never only one correct form; always work to multiply your options in order to expand your understanding of the likely effects of your choices.

ORGANIZATION

Organization is a word that may seem unnecessary to define, but we will qualify the term for our purposes. When I say *organization*, you should take it to mean a "purposeful pattern." You can get your desk organized by throwing away your garbage and arranging what is left in neat piles. But that kind of organization has no purposeful pattern—unless you arrange the materials into one stack for each class or into stacks you need to take care of on Monday, Tuesday, Wednesday, and so on. When writing, you must have a purpose for organizing as you do, and your readers should be able to recognize your purpose—both while reading and after finishing your work.

Basics

Organizing can be both frustrating and rewarding. Even if you have chosen a topic that you like a lot and have good ideas about, you simply cannot get it written down if you cannot find an organizational framework to fit it in. And the best topics often create the biggest headaches because they tend to be complicated, so you try to find some pattern that will allow you to include all your best ideas, without oversimplifying them or making them too complex to follow.

When you do come upon a good plan for organizing, the clouds part and heavenly sunshine beams down. Even if such experiences are not divine, they do make a writer's life a lot easier. When I was about three pages into the first draft of this chapter, I hated it. The organizational plan kept breeding tangents and repetitions and would not allow me to write with any sense of ease. So I threw the pages down, took a walk in my college's nature preserve, and asked myself what do I want to convey to you—my audience. After clarifying my sense of purpose and audience, a new plan for arranging the parts came to mind. I decided to drop a section on types of outlines, stopped worrying about possible overlaps between sections, and focused on a simpler plan.

The point of that self-indulgent story? Take the time to find, wherever and however you can, a plan that you like; and begin your search for that plan by focusing on the fundamentals of purpose and audience.

Models

Composition teachers and textbooks often include in their discussion of organization a series of models. The following paragraphs outline some of the standard models.

The Thesis-Subpoints Model This is probably the most common model taught in composition courses; one version is widely known as the "five-paragraph paper." The introductory section (usually the first paragraph) ends with a thesis statement, three or four subpoints (one paragraph devoted to each) follow, and the concluding paragraph reiterates the thesis. Often the thesis statement serves as an organizational blueprint for the whole paper. Here, for example, is the thesis for an argumentative essay written by a first-year composition student:

> Fidel Castro cannot maintain his rule of the Cubans for long; his government will soon fall due to economic, social, and political conditions.

The thesis statement indicates the three subpoints—economic, social, and political conditions—and the order in which they will appear in the essay. In the first draft, the student had the words *social* and *political* reversed in the thesis statement, but in his paper he argued that Cuban economic conditions had led to social problems, which in turn were causing political problems. When he discovered the logic of his paper's organization, he changed the order of the subpoints in the thesis to match.

Models Based on Patterns of Logic The two primary logical patterns are deductive and inductive. **Deductive** reasoning works from general principles to particular cases. In the preceding example, the student moved from the general assumption that economic and social turmoil will cause political change to the particular case of Cuba, his purpose being to use the assumed general principle to make the particular case convincing. If, on the other hand, his purpose had been to convince his readers that the general principle is valid, he would have used **inductive** reasoning, moving from particular cases (possibly the details of economic and social history in several small countries like Cuba) to the principle that economic and social unrest causes political change. Inductive reasoning is typical of writing in the sciences. Deductive reasoning is the more common pattern followed in expository and argumentative essays written for first-year composition classes; it is the standard for the thesis-subpoints model.

Other Common Models These models focus on simple methods for arranging the parts.

A **chronological** pattern (arranged according to a time sequence) can organize a story or a set of "how to" directions: first A, then B, then C, and so forth.

A **spatial** pattern (arranged according to a sequence of moves over space) can organize a description or analysis of a place or an object: top to bottom, inside to outside, north to south, and so on.

Climactic patterns build from less important parts to a climax in the conclusion and might be used in an argumentative essay that starts out as if it faces no serious problem to be examined and then escalates in intensity.

Anticlimactic patterns, which move from most to least important ideas, may provide the structure for newspaper articles or some business reports—types of writing that need to place the essential information up front for an audience that may read only the beginning.

Comparative patterns stand two or more sets of ideas or information next to each other to show similarities and differences. These models typically take one of two forms: cover all the points about one side then all the points about another; or cover everything that both sides say about the first point, everything both sides have to say about the second point, and so on. If, for example, you want to compare German and Japanese cars in terms of styling, engineering, and performance, your outline could look either like this:

I. German cars
  A. Styling
  B. Engineering
  C. Performance
II. Japanese cars
  A. Styling
  B. Engineering
  C. Performance

or like this:

I. Styling
  A. German
  B. Japanese
II. Engineering
  A. German
  B. Japanese
II. Performance
  A. German
  B. Japanese

As you can see, many standard models provide places to begin thinking about how to organize, but you will have to modify, recombine, and select according to the particular purposes of each piece of writing.

Exercise 7.1 Using Models for Organizing

Here is a set of main ideas from a student essay. It was written in response to an assignment that asked students to study two articles on the same subject—one written the year they were born and one written recently. They were to use the articles to discuss their own conclusions about how society's attitude to the subject has changed during their lifetime.

Arrange the following ideas in three outlines, based on three different models discussed earlier. Indicate at the beginning of each of your three outlines which model it is based on. After constructing three outlines, select which you think is most effectively organized and explain the reasons for your choice.

You will find that you must decide on a thesis (possibly a different thesis for each outline) in order to devise an organizational plan. You may also find that some of the points below will not fit in some of the outlines you create.

1. The new label adjusts to the variety of new homeless people but continues to view people as common inhuman objects in our urban landscape.
2. The "tramps" and "bums" of yesterday are now referred to as "homeless."
3. Twenty years ago, men collected on street corners and skid rows and did not move out of narrow, if unofficial boundaries.
4. In 1994 tension appears to have surfaced.
5. Today we witness a citywide problem of name-calling and food-throwing aimed at poor residents.
6. American apathy toward urban poverty translates to a homeless person's sense of helplessness.
7. Families and children starting to appear on skid rows twenty years ago have become a major portion of today's homeless.
8. As skid rows gained more territory and the homeless population grew, interaction between mainstream American society and the homeless increased.
9. James Besser wrote of the homeless in 1975: "There is no responsive concern on the part of mainstream agencies and government departments about the plight of skid row's exploding population. Its residents are simply written off, shoved into a conveniently invisible corner of our society, and branded as incapable bums."
10. Cities consist of two separate societies.
11. There seems to be increasing anger and violence directed at the homeless.
12. According to a recent *New York Times* article, one homeless person said that he can tolerate some cruelty, but he hates the fact that the hardening attitude toward the homeless gives people an excuse to ignore him.
13. Mainstream citizens no longer see the homeless as "winos" living in isolated areas.
14. The response to the spread of homelessness has been both apathy and violence.

Complications

Should I make myself stick with the plan I begin with? First of all, we often spend time organizing only to find, when we start drafting, that the plan does not work: there aren't enough parts, the parts aren't balanced, there is too much overlap, there are gaps, and so on. Experienced writers often plan an organization before drafting and then analyze and revise the plan after completing a first draft.

All my teacher wants is an outline that looks *organized; that's easy to do.* We can sometimes fool ourselves by writing papers that look organized but have no purposeful pattern. You may have heard lectures in which a professor seems to have ordered the materials into five clearly numbered points, but you detected no reason for point two coming after point one, point two before point three, and so on.

Papers written for composition courses may give you a false sense of security about your ability to organize because they are usually much shorter, and proportionally easier to organize, than professional writing. In longer papers, decisions for organizing subparts may be more complex than those for organizing major parts. This book was fairly easy to organize into chapters and major sections of chapters, but organizing each of the sections, subsections, paragraphs, and sentence parts became complicated. You may reach a point at which you have confidence in and commitment to a thesis, but even in that case you will be revising your organization, at one level or another, throughout every writing project.

The basic models for organizing just don't seem to fit any particular paper I write. None of the models outlined above offers sufficient guidance for all the questions you will have. Comparative models, for instance, offer two basic alternatives, but they provide no sure reason for choosing one over the other. Logical models help only if you have parts that are logically related. What if you have a list of loosely connected ideas? How do you decide which comes first, second, third . . . ? Items that appear in the last position tend to receive the most attention from readers, and the first position commands the next greatest level of attention. So you could put the most important item from your list at the end and the second most important at the beginning, but even that guideline leaves you uncertain about how to arrange the items in the middle—and about which are not important enough to include at all.

The thesis-subpoints model is an extremely useful method of arranging an essay so that its focus and argument are clear, but it has many limitations. Because it is fundamentally a pattern for deductive reasoning, the thesis-subpoints model is of little use in the sciences and business when inductive reasoning is called for. It is also so simple and powerful a model that students sometimes use it for assignments even when their professors explicitly tell them to use other models that are more appropriate for a specific discipline and type of writing.

Despite the models' limits, they should help you think about the kinds of parts and arrangement of parts in papers. It is far more difficult, however, to say how many parts you should include.

Finally, there are no simple, correct answers because the variety of writing situations is infinite. Plan as sensibly as you can, play with options, and if all else fails, take a walk in the woods and wait for inspiration.

Exercise 7.2 Problems with Organizing

Explain any difficulties you had in writing outlines for Exercise 7.1. Were the models sufficient as guides? What questions did you have to answer (such as those about purpose, audience, and focus) before constructing an organizational plan? What other problems confronted you?

COHERENCE

Tutors in our college writing center typically begin a tutorial session by asking a student who has come in for help what he or she wants to work on. The two most common answers to this question? Grammar and "flow." The students who say they want to work on "flow" are focusing their attention on coherence. They sense that what they call "flow" and what I call coherence is essential to good writing, and they are right because coherence is the quality that results when the other structural elements—focus and organization—are working well.

Basics

When we talk about coherence, we often think of **transitions;** they are the devices that make explicit connections between parts of an essay, paragraph, or sentence. But a study conducted in 1983 found that readers were especially likely to judge that a paper was coherent if it had a clear focus and organization (Bamburg). To know what a paper's point and purpose are, and to know how the organizational scheme works out that purpose, is to sense that the paper is coherent.

Devices for Creating Coherence Focus creates coherence by keeping the reader's attention centered on one consistent subject. Therefore, using the devices that create focus (consistent pronoun reference, repetition of key words and ideas, an organizational structure that marches steadily toward the main idea) also creates coherence. Clear organizational patterns help to effect a sense of coherence because they allow readers to see relationships among parts and even to predict the direction of an essay—readers can predict what will come next and thus perceive that the parts are connected.

If you employ language that clarifies relationships among parts and enhances predictability, you can make your writing coherent. We generally call this set of tools transitions. They are a little like the directional signals that drivers use to tell the people behind them where they are going: turning, stopping, making a U-turn, continuing straight ahead (and you know how frustrating it is to try to follow someone through traffic if you are not given those signals). The list of transitions that follows is far from exhaustive, but it should at least remind you of the importance of transitions.

- To indicate that you will be adding to or expanding, but not changing the direction of, your writing: *additionally, also, and, as well as, furthermore, in addition to, in the same manner, likewise, moreover, similarly, too*
- To indicate examples: *a case in point, e.g., for example, for instance, in particular, specifically, to illustrate*
- To indicate a change in the direction of your thought: *but, however, in opposition, on the contrary, on the other hand*
- To indicate a return to the line of thinking you were on before changing directions: *all the same, in spite of, nevertheless, nonetheless, still*
- To indicate a concession or qualification: *for the most part, granted, mainly, of course, to be sure, usually*
- To signal cause-and-effect or logical relationships: *accordingly, as a result, because, consequently, for this reason, hence, since, then, therefore, thus*
- To indicate relationships in time: *afterwards, at first, eventually, frequently, in the end, meanwhile, next, since, then*
- To indicate relationships in space: *above, around, below, farther, nearer*
- To indicate a summary or reiteration: *all in all, briefly, i.e., in other words, in short, that is to say, the point is, to summarize*
- To indicate a conclusion: *finally, in closing, in conclusion*

Exercise 7.3 Using Transitions to Create Coherence

Here is a short paragraph written by a student. Copy it, adding transitional terms to show the connections between the writer's thoughts.

> Students work their way through college for many reasons. Sara's parents can't afford to pay the full tuition at the private school she wants to attend. Bill's father believes that Bill will value his education more if he pays for it. Bill works nights at a garage. Sam works Saturday mornings at the dining hall. Paul doesn't need the money. He wants a car. He

works nights at a factory. None of these students feels that he or she has sufficient time for studying. Each may be developing character and self-discipline. They are also struggling to maintain a decent grade point average. Studying is a way to teach character. Students who can afford to avoid working should do so. They will be able to spend their time studying.

Complications

If my paper is focused and organized, my readers should be able to follow it even if I don't create any transitions. There is always a gap between what the writer and the reader perceive. Although your reader will not sense coherence unless your writing is focused and organized, you may not be sure the focus and pattern you have planned and implemented will come through for your readers. Explicit transitions can serve to highlight your focus and pattern.

It is, admittedly, easy enough to use some common strategies to create artificial (and thus unnecessary or misleading) transitions between and within paragraphs. Many writers use numbers as transitions: "My first point . . . My second point . . ." and so on. Or you might simply use some common transitional terms to say nothing more than that you are saying more: *furthermore, additionally, it is also true that.* If you use those transition devices mechanically, you can fool yourself into thinking you are creating meaningful transitions, when you are creating only confusion. If, for example, you use numbers but have no reason for "Point two" appearing before rather than after "Point three," you are using mechanical rather than meaningful transitions. Always build transitions that carry your readers from one part to the next by using the meaningful connection between parts as the material for the bridge.

Exercise 7.4 Revising to Improve Organization and Coherence

Printed below is a poorly organized and sometimes incoherent student essay. First, analyze the essay to find out where and why the organization becomes a problem. Indicate what particular problems (misleading transitions, missing transitions, an illogical sequence of ideas) you discover. Second, reorganize the essay (write an outline), explaining the model (or combination of models) you use in your reorganization and why you make the choices you do. Your outline should indicate how you would rearrange the order of the paragraphs and the order of sections within paragraphs. Third, write at least five examples of meaningful transitions that you would use to connect paragraphs or sentences.

In 1973 the Supreme Court made a landmark decision that explicitly legalized abortion in the United States. Controversy regarding the rights of a fetus soon erupted, and divisions emerged between pro-choice and pro-life groups. The law of the land changed to favor the pro-choice movement; the years immediately following the Court's ruling were trying times for physicians who performed abortions. These doctors of obstetrics and gynecology found themselves unprotected against lawsuits in several circumstances, especially in cases involving late-term abortions. Following the last twenty years the battle between pro-life and pro-choice groups has intensified, and the major antagonist facing abortion physicians has changed. It is not legal matters which abortion physicians fear the most; acts of violence carried out by pro-lifers pose the greatest threat. 1

Controversy regarding the performance of abortions continues to exist in intensified form in the 90s. Additionally, abortion physicians have come to face a new threat in their profession. Abortion physicians are the targets these activists choose to release their frustration and hostility upon. Some anti-abortion activists, unable to make progress within the political realm, are taking steps so extreme that they are violating the rights and safety of others. Certain opponents of abortion are willing to bomb, shoot, stalk, and even murder their way to their goal.

In 1975 a court case developed which focused the nation's attention on some of the complex moral and medical questions that accompany the issue of abortion. The prosecution charged that the fetus, in effect, was born the moment Edelin broke the connection it had with its mother's uterus and that the doctor had not taken sufficient steps to sustain its life. Kenneth Edelin, a doctor of obstetrics and gynecology, was charged with manslaughter in the death of an aborted twenty- to twenty-eight-week-old fetus which he removed from its mother's body. The jury found Edelin guilty of the accused crime, considering the fetus he had aborted to be a "viable" human being.

In March of 1993 Dr. David Gunn became one of several physicians to fall victim to anti-abortion violence. He was fatally shot by Michael Griffin, an abortion protestor, at the Florida clinic where he performed abortions. His story is, consequently, more disturbing than most. Although the majority of pro-lifers denounce Griffin and his use of violence, a small minority are willing to defend his action. A small group believes that there is no hope for justice within the existing law; one is furthermore justified in going outside of the law to find justice.

The overall reaction to the trial was of mixed sentiment. Edelin received a warm welcome, which "underscored the widespread support 5 extended to him by doctors and laymen around the nation." This happened upon returning to his post at Boston City Hospital. Most maintained that the verdict was a "shocking miscarriage of justice." In general, the public did not take on a hostile attitude toward Edelin. Because the morality of late-term abortions was sometimes questioned by the general public, the legality of performing them was not because no laws existed which explicitly prohibited them. In Edelin's case, the general attitude was that he had only done his job in removing the fetus and was not guilty of any crime. Most right-to-lifers, on the other hand, were satisfied with Edelin's verdict because it set a precedent for their cause. They saw it as a victory—not necessarily over Dr. Edelin, but over the existing laws allowing abortion.

Abortion physicians were not at all content with the trial's resolution. Dr. Edelin was put on one-year probation rather than being sent to jail; many saw the verdict as a threat to their profession. Physicians felt victimized and were concerned that they might be convicted of a crime for doing their job of performing legal abortions. Several physicians and hospitals changed their policies and refused to do abortions on fetuses more than sixteen weeks old because of the fear of lawsuits that the ruling created.

Through the controversial 1973 Supreme Court ruling, abortion has been a topic of hot debate in the United States. Abortion laws have been changed and clarified and as a result are no longer a pressing concern for physicians. Similarly, because some pro-lifers have resorted to using violence to promote their cause, a physician who wishes to perform an abortion today lives in fear of being the victim of personal and physical attack rather than just the object of a lawsuit.

8

Traditions in the Disciplines: Organization and Coherence

Differences between the organizational models that are typically taught in first-year composition courses and those used in the sciences and business seem obvious—boldfaced headings turn bright spotlights on them. But often the similarities and differences are more subtle than they appear. And often students learn to use common models without understanding their logic.

A key point to remember is that as we talk about disciplinary traditions in each part of this book we are talking about how people in the various disciplines *think*. It is essential to see that you are not being given a cookbook list of recipes for successful writing in the various disciplines. Rather, the general ideas and examples offered give you a taste of possibilities so that you can begin to understand *reasons* for the traditions. Those reasons appear in the ways that accepted topics (Part 1) and accepted styles (Part 2) reveal the character and values of the disciplines.

In this chapter we will consider the organizational patterns that illuminate the structures, the processes, the logics that are practiced in the disciplines. The art critic—motivated by the desire to enrich an audience's appreciation—constructs a fluid logic, opening newer and richer vistas of understanding as the audience makes its passage through the critic's essay. The physicist—driven to add some piece of information, whether astonishing or minor, to the vast, accumulating body of scientific information—

recreates experimental processes and results in the shape of the scientific method that makes the collaborative enterprise of science possible.

As we look into the traditions of each of the four disciplinary groups, we will discuss large-scale organization (taking a bird's-eye view of the shape of whole pieces of writing), small-scale organization (viewing the organization of sections, subsections, and paragraphs), and coherence (examining the disciplinary traditions for connecting parts to one another).

BUSINESS

Business writing can be organized, in the broadest terms, like writing in the humanities or the sciences. Perhaps the most common large-scale feature of organization in the humanities is that it typically begins with the main point, presenting the thesis in the introduction. It is also, usually, deductive in logical structure; it begins with general principles and uses them to explain particular cases. Writing in the sciences also presents the main point or points at the beginning, summarizing the conclusions in the abstract. But the rest of a scientific paper is organized to build up to the main idea; it reasons inductively, developing general principles out of particular details.

The purposes of writing in business are so varied that business writers will use both deductive and inductive structures. A business letter might begin with a general principle and use that to justify a request or urge a purchase; a business report might use a scientific method to analyze a product or production procedure and arrive at a general principle to guide policy decisions.

Additionally, each of the several different standard kinds of writing in business has its own traditional structure. To complicate the situation even more, individual corporations often have their own prescriptions for the different types of writing that employees produce—standard models for letters, memos, and reports. You will need to know the traditions of writing in the business world but should also be prepared to adjust to your company's particular requirements—just as you now adjust to the requirements of each of your teachers.

We will first look at several bases for large-scale organization and then study the conventions for organizing business reports, on both large- and small-scale terms. Finally, we will discuss methods for establishing coherence in business writing.

Large-Scale Organization

Organization Based on Type of Document As you look for organizational models in business writing, you will first have to consider the different types of writing. These we can subdivide into three groups:

1. **letters and other routine correspondence** (each company and division within a company will regularly write certain types of letters and short memos),
2. **short reports** (these often take the form of memos; they can be as brief as a single page and are usually not longer than five pages), and
3. **long reports** (the format for these can be rigidly determined by a company, and they can be as long as a book).

Each of these three general types is further subdivided—the first into many particular types of correspondence. The following brief sample of standard letter types will show you what I mean:

> request letters (for information, action, meetings, etc.), adjustment letters, claim letters, collection letters, credit approval or disapproval letters, good will letters (to say thank you, congratulations, etc.), personnel letters (offering or denying employment), sales letters, and letters of reply to all of the above kinds of letters.

Companies often dictate the appropriate organizational plans for various kinds of letters by giving employees models. One national insurance company, for example, gives new salespersons a packet of letters—models for introductory letters, letters that follow up a first conversation, letters that offer information, and so on. All the employee has to do is fill in names and addresses.

Reports, too, come in many forms. Many are routine—annual, quarterly, and monthly reports on sales, productivity, policy, and so forth. The more routine a report, the more likely it is to follow a standard form. In fact, for many such regular reports a reporter simply fills out a standardized form. Reports that are written to meet special needs (to plan a change in policy, to assess a proposed merger, to analyze an unexpected drop in profits) will give writers more responsibility for coming up with an organizational plan, but even these (as we will see later in this section) usually conform to traditional structures.

Organization Based on Audience Response Most business documents conform to either direct or indirect organizational strategies. **Direct-plan** documents put the main point at the beginning and follow it with necessary information and explanation. **Indirect-plan** documents delay the main point until the end.

The choice between these two structures depends on how you expect your audience to respond to the main point. Generally speaking, if you are conveying good news, or desired information, or some message that should evoke no emotional response at all, you will use the direct plan. But if you are sending bad news, a controversial message, or other information that could elicit a negative emotional response, you may want to cushion the blow before you deliver it and use the indirect plan.

A bad-news letter, which many business writers say is the hardest piece of writing they tackle, is most often organized on the following indirect model:

Buffer A statement, usually neutral in tone, that focuses on some point of agreement or cordiality between the writer and the reader.

Reasons The reasons that led to the writer's decision; when possible, these should be presented in a way that will lead the reader to come to the same decision as the writer and thus anticipate and understand the bad news before it is stated.

Bad news The statement of the news.

Closing A friendly final statement that attempts to forestall any severe response that would excessively damage future business relations between the writer and the reader.

Another common correspondence that follows an indirect plan is the persuasive letter, and its organization is called the "AIDA" plan. When using this structure, you gain **A**ttention, offer ideas and information to create **In**terest, generate a **D**esire for what you have to offer, and finally motivate the readers to **A**ction (which usually means that you want them to spend their money).

Some business writers prefer the direct plan even for bad-news messages. If you have a close relationship with your audience, that audience could be more offended by your stalling than by your bad news. Any time an audience senses that you are beating around the bush or trying to sugarcoat bad news, their response could be worse than what a straightforward statement of bad news might cause. This observation should remind us of two lessons we have confronted before: (1) business writers must be keenly aware of their relationship to an audience, and (2) any kind of conventional structure, including direct and indirect plans, can be done well or poorly, success or failure depending more on quality than on conformance to convention.

Exercise 8.1 Organizing a Business Letter

The following list summarizes the main points of a business letter. The letter was written to the director of marketing of a major corporation (to protect the company's name and ideas, I've changed the content to my own fictitious marketing program). Its purpose was to convince the marketing director to read the promotional materials that the writer was sending and to meet with the writer to talk further about the proposal.

Organize the list of points and write a letter to the same audience and with the same purpose as the original letter. You will have to decide how many paragraphs to use and will have to create transitions between paragraphs.

1. Please read through the enclosed materials.
2. We are a new company.
3. I am sending our information packet and a copy of a preliminary marketing report.
4. Our concept for marketing clothing is unique.
5. Please have your secretary call our office to set up a time for us to discuss this exciting new program.
6. One of our distributors photographs the customer with a digitalized camera.
7. We talked on the phone last week.
8. Several major chains have already committed to using "The Emperor's Virtual New Clothes."
9. "The Emperor's Virtual New Clothes" will offer your company a highly profitable method for catalog clothing sales.
10. We offer all necessary equipment, training, and follow-up service.
11. You gave me permission to send you the enclosed materials.
12. The customer then selects the clothing he or she likes from your catalog and watches the computer create simulations of the customer wearing the different items of clothing—in appropriately exciting settings.
13. Our unique concept is called "The Emperor's Virtual New Clothes."

Organization Based on Purpose The organization of business documents may also be decided by their purpose: to convey information or to conduct an analysis.

An **informative** report uses the simplest possible subdivisions and arrangements of the categories of information being offered. Information about a production process can be organized by the parts of the process, in chronological order; information about a machine can be organized by the machine's basic parts, in spatial order (top to bottom, inside to outside, etc.); information about profits can be broken down into various products or services, arranged in order from most to least profitable.

An **analytical** report requires a more complex organization because it must accomplish more goals than an informative report. It must define a problem, analyze its causes, suggest solutions, and offer specific recommendations. It must include analysis and information, logic as well as detail; it must arrange all of this in a way that is appropriate to the precise purpose of the report.

Organization of Long Reports Long reports, whether informative or analytical, consist of three main parts:

Prefatory section
Main text
Supplementary section

The **prefatory** section contains the following items (optional items are placed in parentheses):

Cover—always includes the report's title and may include the date and the authors' names (long reports are usually written by more than one person)

(Title fly)—a single sheet, preceding the title page and including only the report title

Title page—includes four items: (1) title; (2) name, title, and address of the person or business firm that requested the report; (3) name, title, and address of the person or business firm that wrote the report; (4) date the report is submitted

(Letter of authorization)—the letter requesting the report

(Letter of acceptance)—the letter agreeing to write the report

Letter of transmittal—the letter that presents the report to its audience

Table of contents—a list of the report's headings and the page numbers on which they appear

(List of illustrations)—a list of all graphic aids: tables, diagrams, and the page numbers where they appear

Executive summary (also called an abstract or a synopsis; sometimes is placed between the letter of transmittal and the table of contents)—a short (less than one page) overview of the report; sometimes (when the report follows a direct plan) summarizes the main findings, conclusions, and recommendations; sometimes (when the report follows an indirect plan) describes the contents, plan, and purpose of the report

The **main text** includes these sections:

Introduction—forecasts the content and structure of the main text; also establishes the report's purpose in the context of the reasons that it was requested

Body—usually the longest section of the report, this is the meat of the report; it presents the information (and analysis) that leads to the conclusions

Terminal section—made up of
- **Summary**—the main findings of the report
- **Conclusions**—interpretations of the findings; answers to the questions that initiated the report
- **Recommendations**—the list of actions that the report suggests
- **Notes**—endnotes used to document sources (footnotes may also be used for documentation)

Supplementary parts include

Appendixes—detailed information that supports or extends the information and ideas provided in the body

Bibliography

Index

The organization of a long report runs according to a specialized and widely accepted model. You will, of course, encounter variations, but the overall plan is familiar knowledge among business writers.

If you are a business student, you will learn some standardized plans for the process of working on a report: defining the problem, doing the research, analyzing the data, and so forth. You must not, however, use these steps as an organizational plan. Barbara Walvoord and her colleagues, when studying students writing a paper for a business class, found that no students in the class organized the final drafts differently than they organized their plans for writing the papers; in other words, they all used the process they followed in conducting their research and analysis as the basis for organizing their paper. All consequently failed to meet the teacher's expectations.

Professionals organize a report according to professional standards and the purpose and content of the particular report. Whoever asks you for a report will not be interested in the story of what you did; they only want the results, written in a recognizable, traditional format that will allow them to make a decision (the fundamental purpose of all business writing) as quickly and reasonably as possible.

Exercise 8.2 Organizing Information in the Appropriate Sections of a Business Report

Here is a list of items that might appear in a business report. On a separate sheet of paper, write down the numbers one through ten and then the name of the section of a business report in which each of the items belongs. Use the names of the sections of business reports that are given in the section "Organization of Long Reports." Be as specific as possible; in other words, do not simply write, "main text" or even "terminal section of main text." Instead specify, "conclusions, in the terminal section, in the main text." Some of your choices should be easy, but some are tricky. Any time you are uncertain about which section an item belongs in, write out an explanation of your uncertainty.

As you read each item, imagine that you are writing a report for the company created in Exercise 8.1, the company selling "The Emperor's Virtual New Clothes." The purpose of your report is to review the performance of the new marketing system and recommend changes. Imagine that the computerized machinery involved is constantly breaking down and eating up profits through downtime and repair costs.

1. A specific proposal to upgrade the computer hardware used by distributors.
2. A letter presenting your report to your boss.
3. An analysis of causes of equipment failure.
4. A timeline for upgrading hardware.
5. Your name.
6. Technical specifications on present and possible new computer hardware.
7. A brief summary of findings and recommendations.
8. Records of money lost to equipment failure.
9. A table comparing costs of repair versus cost of upgrading equipment and cost of replacing equipment.
10. A suggestion that the answer to the company's problem is to upgrade rather than repair or replace equipment.

Organization within Sections, Subsections, and Paragraphs

Organization within Sections and Subsections: The Body of a Report Perhaps the most common method for organizing the body of a report is a problem-solving structure, something like the following:

1. Define and analyze the problem (which means to break it into essential parts).
2. Consider possible causes of the problem.
3. Consider possible solutions for the problem.

You may remember that in Chapter 2 we looked at the outline of a marketing report written for an art supply store; the organization of its body follows a problem-solving plan.

I. *Situation Analysis* includes subsections on the industry, company, product, market, competition, distribution strategies, pricing policies, promotional strategies, environmental factors, corporate objectives and strategies, and location.
II. *Research Results* covers both a research plan and research analysis.
III. *Alternative Solutions* sets out five solutions not included with the recommendations.

This structure leads right into the recommendations (what you believe to be the best solution or solutions) that appear in the terminal section.

Other standard organizational methods include those that we discussed in Chapter 7. Business writers select among them based on purpose and content. Any of these structures could be used within a problem-solving plan, as ways of organizing any of the three sections of the marketing report outlined above. Here are some examples:

- If you are writing about a *process* (a set of steps in manufacturing a product), then you might choose **chronological** organization (giving a subsection to each manufacturing step, in order).
- If you are writing about an *object* or a *geographic trend* (decreasing sales in urban retailers), then you might choose **spatial** organization (comparing sales at urban retail outlets to those at suburban outlets).
- If you are writing about a question of whether or not to change a company *policy* (adopting a new policy on health insurance benefits for permanent part-time employees), then you might choose **criteria-based** organization (considering each of the primary issues on which the decision could be made).

Many options are available; be sure to survey your options—both the company's standards and your inventions—before deciding how best to organize.

Another point to remember as you divide and arrange the parts of your subsections: make frequent divisions. Business writers do not, as do writers in the humanities, expect readers to get into the flow of an argument and follow it all the way to its end. Rather, they expect readers to jump around within a report, reading only some parts and reading those parts out of order. This means that business writers must (1) provide headings that mark subsections and (2) provide reminders about where, within the large-scale organizational plan, each subsection fits. Some business-writing experts recommend at least one heading (or visual aid) per page; in other words, business writers use headings to indicate new subsections almost as often as writers in the humanities use indentations to mark new paragraphs. Reminders about where a section or subsection fits in the large-scale plan are often provided by headers or footers, like the one appearing on this page.

We will talk more about headings, headers, and other visual clues to organization in Part 5. For the time being, though, this book exemplifies how business writers use such clues. And I have chosen this format because I make the same assumption about your reading as do business writers about their audience: I realize that you may not read all the sections and that you may not read them in order.

Organization within Paragraphs To begin with, paragraphs in business writing, like subsections, are shorter than those in the humanities. Glenn Broadhead and Richard Freed, in a study of the revision practices of two management consultants, learned that the paragraphs in their reports averaged only fifty-three and sixty words (73). The paragraphs in a set of model letters for insurance salespersons, mentioned earlier, average only thirty-five words.

When your paragraphs are only two or three sentences long, as they are in those insurance sales letters, you have time only to (1) make a transition from the preceding paragraph, (2) state the topic of the new paragraph, and (3) give the necessary information. Paragraph organization is therefore relatively easy.

The organization of bulleted lists corresponds to that of paragraphs. Here is a typical format (it comes from a marketing report written by student interns for a kitchen and bath store):

> A survey of people who had remodeled their kitchens in the past five years yielded information about
> - age of house
> - income of homeowner
> - marital status of homeowner
> - value of house

After gathering the data from their survey, the students determined that people most likely to remodel a kitchen (those, in other words, whom the store owners should target in their advertisements) were married people with an income between X and Y dollars, who owned homes over X years old, ranging from X to Y in dollar value. The results told them which of the four bulleted factors were most important in determining the likelihood of remodeling, and they arranged the list in order from most to least important. Business writers organize these lists by the same models that are available for paragraphs and larger subsections.

Coherence

Coherence on the Large Scale Coherence begins with a logically connected organizational plan; it is confirmed and maintained by clear announcements of your plan and regular reminders of where the reader is within the plan. In a report you would first articulate the plan in the executive summary and then repeat it in the table of contents, depending on which of these two items you put first. In these two places you establish not only the organizational plan but also the language you will use throughout the paper to designate your main sections and subsections and thus to remind the readers of where they are in the overall structure.

The writers of the marketing report for the kitchen and bath store give us a nice example. Their table of contents (which the students placed before their executive summary) shows the following main headings (in parentheses I indicate how the students' report breaks into the three standard main sections of business reports).

- (Prefatory parts)
    - Acknowledgments [since this was a student project, these take the place of the letters of authorization, acceptance, and transmittal]
    - Table of Contents
    - List of Tables and Figures
    - Executive Summary
- (Main text)
    - Situation Analysis
    - Survey Analysis
    - Recommendations
- (Supplementary parts)
    - Appendixes
    - Sources

In the table of contents, the section titled "Situation Analysis" is further subdivided into seven categories:

- Competitive Environment
- Economic Environment
- Social/Cultural Environment
- Technological Environment
- Political/Legal Environment
- Industrial Environment
- Summary of Situation Analysis

The executive summary opens with a statement of the "two burning questions" that led to the request for a marketing report (yes, the students indulged in a little overwriting with the word *burning*). It then begins its second paragraph with the following sentence:

> The situation analysis will focus on six different areas: competitive environment, economic environment, social/cultural environment, technological environment, political/legal environment, and industrial environment.

In using the same language as in the table of contents, the executive summary reinforces the coherence of the plan.

The report uses the same language again for the headings of the main subsections. It could have gone one step further and used the same language for headers at the top of every page; that way readers could glance at the top of a page and know what section and subsection they are in. Additionally, the grammatical parallelism of the language helps to establish a sense of coherence. In a well-written business document, we could pull out all the headings and see consistent grammatical forms used at each different level:

- Situation Analysis
- Survey Analysis
  - Competitive Environment
  - Economic Environment
    - Showroom
    - Market

and so on. (See the discussion of parallelism in business writing, Chapter 5.)

Subsections are made coherent in the same way. The introductory sentences to the section titled "Competitive Environment" read:

> In the following section we analyze five regional competitors of Kitchen World. For each we examine four factors: showroom, market, points of pride, and strengths and weaknesses.

Again, the introduction forecasts the organizational plan and establishes the language that is used throughout the section. Consequently, the readers experience no gaps, no uncertainty about where they are or why; they experience the connectedness and flow of a coherent piece of writing.

Coherence at the Paragraph Level When moving from paragraph to paragraph or from sentence to sentence within paragraphs, coherent business writing uses the same strategies that we discussed in Chapter 7. One of the model letters from the packet given to insurance company employees provides an example. Its purpose is to explain that the writer has just graduated from college and begun working for Company X and that she wants to schedule an appointment with the reader. It is made up of three paragraphs which follow a chronological organization. I have italicized words that focus on the time sequence and thus create the transitions. (The symbol ¶ indicates a paragraph.)

¶1 *After I graduated* and started working . . . *I realized* . . .

¶2 *In the past few weeks* I have talked to some old college friends . . . but I have *not yet* had a chance to talk with you.

¶3 *I will call you soon.* . . .

The chronological structure that the transitions highlight makes the letter easy to follow.

Exercise 8.3 Organization and Coherence within the Body of a Short Report

What follows are a set of parts (the topics of individual paragraphs) from the body of a short report written by college students in a business-writing course. The content is make-believe. The students pretended that they were a marketing consulting firm; their report was supposedly requested by a group of people starting a business that supplies flowers for the public areas of business firms. The purpose of the body is to present the outline of the marketing plan for the new business, named "Professional Floral Arrangements."

Create an organizational plan for the body of the report. Explain why you organize the parts as you do.

Next, write out the body, adding headings and transitional elements (words, phrases, or even whole clauses) that will give your organized body coherence.

MARKETING PLAN FOR PROFESSIONAL FLORAL ARRANGEMENTS

Professional Floral Arrangements plans to open on May 22, 1989. The company has hired Marketing Magic to market the new business.

Opportunity Analysis

Approximately 90 percent of the businesses in metropolitan Grand Rapids utilize flowers in their decor. Although there are a variety of florists in the area, not one focuses solely on supplying flowers for business needs. A florist who can provide reliable, quality service to this group of consumers will find a ready market.

Targeted Market Segment

Professional Floral Arrangements will target the segment of the retail flower market which caters to businesses and contract buyers in Grand Rapids. This segment has an estimated potential dollar volume of approximately $200,000 per year. The store, located at 28th street and East Paris, is well located to serve the business community.

The needs of this market segment are

- prompt, reliable delivery
- high-quality merchandise
- quick response to special requests
- competitive pricing
- flowers that enhance the corporate image

Business Objective (primary): To achieve a 5 to 10 percent share of the current local market.

MARKETING STRATEGY

Promotion

Promotion for Professional Floral Arrangements will begin the week prior to opening day. Strategies for promotion will include

- a mass mailing to potential business clients
- advertisements in the local papers about the service offered (a week prior to opening)
- advertisements in local business magazines

Product

Professional Floral Arrangements retails fresh flowers in custom arrangements or bouquets. It specializes in custom arrangements for businesses in the area. The product offering is limited to fresh flowers only. It excludes silk flowers and potted plants.

P.F.A. will stock a variety of colors of the following flowers:

- roses
- carnations
- status
- irises
- tulips
- freesias

Place

The new store will be located in the East Paris Shoppes, on the corner of 28th and East Paris in Grand Rapids. Delivery service is standard, with delivery covering metropolitan Grand Rapids. Pick-up service is also available, and walk-in accounts are welcome.

Price

See pricing section of report for specific break-even analysis.

Promotional Theme

The theme chosen by the owner of Professional Floral Arrangements is "A little nature is natural." The theme encourages local businesses to bring natural beauty into their offices through the use of fresh flowers. The marketing scheme will incorporate this theme into the promotional materials.

The mailing materials and advertisements emphasize the subtle beauty and elegance brought into the work environment with floral arrangements. The plans will also indicate the popularity of using flowers to enhance corporate atmosphere.

All promotional pieces will also emphasize the professional high-quality service offered by Professional Floral Arrangements. The contract business focus will enable P.F.A. to present its strengths in a way that differentiates them from other floral shops in the area.

Exercise 8.4 Organization in Business

In your library or from any other sources you can locate, find examples of organizational formats in business writing. Look for examples of the traditions discussed in the preceding section, modifications of those traditions, and nontraditional organizational plans. Analyze the reasons for and the effectiveness of the organizational plans of three different pieces of professional business writing.

WORKSHOP 9

Organization and Coherence in Business

In this workshop you will consider Joe's questions and choices about organization and coherence. If you want to review the assignment for Joe's paper, it can be found in Chapter 2, page 85. You will also need to refer to the complete text of Joe's paper in Chapter 2 in order to complete this workshop.

JOE'S QUESTIONS ABOUT ORGANIZATION AND COHERENCE

Joe wrote only one comment on organization in his journal.

> This was spoon-fed. I had no questions here. Business papers are so obviously and logically organized.

Apparently Joe saw the organization as a matter of following the outline that had been assigned by his teacher. He therefore expressed no concern about either large- or small-scale organization and coherence.

JOE'S OUTLINE

The following outline was created by using the headings and subheadings of the final draft of Joe's report. If we compare this outline to the assignment sheet, we can see why Joe wrote down no questions about organization—his outline follows the assignment sheet almost exactly, transferring the headings given in the assignment directly to his paper.

Executive Summary
Introduction
  Case
  Objective
Initial Situation Analysis
  Methodology
  External Environment
  Internal Environment
  Product Market
    Occupant
    Object
    Occasion
    Organization
    Operation
    Objective
    Other
Objective of Study
Methodology Employed to Gather Additional Data
Results from Methodology Employed
  General Description of Data
  Relevant Crosstabulations
  Significant Differences Among Groups
Conclusions and Recommendations
  Problem
  Critical Factors
    In Selecting a Target Segment
    In Selecting a Growth Strategy
  Alternate Solutions
  Recommended Solution
  Additional Comments
    I. Message
    II. Media
    III. Strategy
Appendices

ANALYSIS AND REVISION OF THE LARGE-SCALE ORGANIZATION

The single difference between Joe's outline and the one given in the assignment sheet is this: The assignment stipulated that the Introduction should include a description of the case (the institution being studied) and a brief (two to three sentence) outline of the paper. Instead of that outline, Joe included a section that he called "objective." In that section he includes two bulleted objectives, or purposes, of his report: (1) to analyze the tennis club and (2) to determine which market segment to target for promotion. In effect, those two purposes shape the two largest parts of the paper—the Initial Situation Analysis and the Results and Conclusions and Recommendations. Do you think Joe made a wise decision in focusing on purposes rather than a simple outline of parts in the second part of his Introduction?

Next, compare the outline of Joe's report to the standard report organization that we looked at in the preceding section. If there are differences, do they effectively reflect the special purposes of Joe's report? Do you have any questions about the reasons business reports are organized as they are? What, if any, changes would you suggest in the large-scale organization of the report? In order to answer these questions, you will need to look at the content of each of the parts (in Chapter 2), not at just the outline above.

ANALYSIS AND REVISION OF ORGANIZATION WITHIN SECTIONS

Since the broad organization was given by the assignment, Joe had no questions about organization, but how did he make decisions within sections and paragraphs? Look at one of the longer sections of the report, the "External Environment" section of the Initial Situation Analysis. Explain why you think it is organized as it is, and suggest any revision that you think would better accomplish the purpose of the section. Comment on both the order of the three paragraphs and the order of sentences within the paragraphs.

> *External Environment*
>
> Schwartz's is one among several tennis clubs in the south suburbs of Burlington. Although none of these other clubs is within a mile radius of its setting in the heart of Oakton, Schwartz's must compete with tennis clubs of the neighboring suburbs, which can be conveniently accessed by the major roads. It is a perfectly competitive environment.
>
> Economically, the city of Burlington is considered an area of high potential for businesses. There seems to be economic growth both downtown and in the suburbs, as buildings go up and businesses boom. Unemployment is also on the decline in the Mimi Valley. With its location in the affluent suburb of Oakton, Schwartz's is nestled in among the lavish estates of Burlington's old-money families, which contributes to the steadiness of customer buying power and economic opportunity.

> On the sociocultural level, Schwartz's has a very definite niche. Both the surrounding communities and the patrons of the tennis facility are by a high majority Caucasian. In the estates of Oakton, most of those Caucasians are of the over-fifty generation, but in the areas about a mile away from the club, there is a younger, family set of residents in the majority. In fact, this family class is growing in the community, as the grade schools are at record enrollment. The city of Burlington is so highly segregated, that the nearest community of minorities is too far away to be in Schwartz's market.

ANALYSIS AND REVISION OF COHERENCE

Explain the techniques that Joe's report uses to create coherence. Give examples of two or three techniques that lend coherence to the overall structure and of two or three techniques that improve coherence within sections, subsections, or paragraphs.

Questions for You

Having thought about organization and coherence in Joe's report, what questions would you ask about organization and coherence if you were revising the whole report? Do you have any remaining general or specific questions about the principles of organization and coherence in business writing? If you do, write them out for your teacher to see.

HUMANITIES

Only in the humanities do we find no prescribed formats for the organization of reports and essays. In the natural and social sciences, as we have noted in earlier chapters, articles and lab reports almost always have an IMRAD organization: Abstract, Introduction, Materials and Methods, Results, and Discussion. In business, as we have seen, reports include a number of standard, conventionally arranged parts. In the humanities you will normally find an introduction, a body, and a conclusion; but often the introduction and conclusion are not marked with headings or otherwise visibly set off from the body.

Remember that the general purpose of most writing in the humanities is to enrich the audience's understanding through interpretation; and writing in the humanities often focuses on the ambivalence and complexities of interpretations. We would not, therefore, expect rigidly prescribed organizational models. The lack of headings to mark major sections and the general lack of any visual clues to organization—other than paragraph indentations—leaves writers considerable freedom in organizing.

Writers in the humanities do, however, structure their writing according to some discernible traditions. Most essays in the humanities present a thesis statement at the end of an introductory section, and the thesis usually sets up the logic that forms the basis for organizing the whole essay. In the sections that follow, we will study these traditional standards, looking at how they influence both large-scale organization and organization within sections, subsections, and paragraphs. Finally, we will look at the ways writers in the humanities establish coherence.

Large-Scale Organization

Essays in the humanities break down, of course, into more than an introduction, body, and conclusion. As we subdivide sample essays to see how they are organized, I will refer to the different levels of subdivisions as first-level subsections, second-level subsections, and so on.

Organization of Critical Essays In Chapter 2, I showed you the thesis statement from a paper on Charlotte Brontë. Let's now take a look at its organization. It is a ten-page paper (about 2,600 words) built on twenty-two paragraphs (averaging about 120 words each). The first paragraph, the introduction, presents the three novels that Brontë published in her lifetime (*Jane Eyre*, *Shirley*, and *Villette*); it tells us that they were "reviewed extensively in the periodicals" of her time; and then it sets up, in two closing sentences, the logical arrangement that the whole paper will follow. Here are the two final sentences of the introduction:

1. Brontë's contemporary reviewers praised her for her ability to stir readers' emotions.
2. However, because they were too concerned about conventions of tightly structured plots, these critics "failed to discover that the loose plot structures they criticized play a vital role in the development of the novels' characters and the readers' emotional attachment to those characters." [This is the paper's thesis statement.]

The introduction thus presents a two-part structure: (1) what the critics got right and (2) what they got wrong. This structure allows the author both to analyze the critics' response and to voice his own point about what makes Brontë a great writer. Those two points of analysis correlate with the two main ideas of the thesis statement: (1) critics "failed to discover" (2) "that the loose plot structures they criticized play a vital role in the development of the novels' characters and the readers' emotional attachment to those characters." Now consider the way the whole paper is organized:

Paragraph 1	(Thesis)		Introduction
Paragraph 2	Critics' positive responses to *Jane Eyre*	1	A. What the critics got right
Paragraph 3	Critics' positive responses to *Shirley*		
Paragraph 4	Critics' positive responses to *Villette*		
Paragraph 5	An example of Brontë's emotional power	2	
Paragraph 6	An example of Brontë's emotional power		
Paragraph 7	An example of Brontë's emotional power		
Paragraph 8	Critics' negative responses to *Jane Eyre*	1	B. What the critics got wrong
Paragraph 9	Critics' negative responses to *Shirley*		
Paragraph 10	Critics' negative responses to *Villette*		
Paragraph 11	Reasons for critics' negative responses	2	
Paragraph 12	Reasons for critics' negative responses		
Paragraph 13	Critics were right about structure of the plots, but wrong to say that loose, complex plots weaken the novels	3	
Paragraph 14	In fact, the critics faulted Brontë's realism		
Paragraph 15	Readers' response to the realism strengthens the novels		
Paragraph 16	Examples from *Jane Eyre*	4	
Paragraph 17	Examples from *Jane Eyre*		
Paragraph 18	Examples from *Jane Eyre*		
Paragraph 19	Examples from *Villette*		
Paragraph 20	Examples from *Villette*		
Paragraph 21	Critics failed to see that emotions they praise grow from plots they fault		Conclusion
Paragraph 22	Concluding example and reiteration of thesis		

The body of the paper is divided into the two parts (bracketed and marked A and B) that are predicted in the introduction. Each of those parts begins with information about what the critics wrote and ends with examples from the novels. But part B has, at its center, the heart of the paper's argument. Paragraphs 11 and 12 (marked A.2) serve as a transitional section into the author's main ideas that are developed in paragraphs 13 through 15 (A.3). The conclusion then reiterates the thesis.

The organization is, first of all, very easy to follow because it embodies the logic of the whole argument and is divided into easily recognizable sections, each with a clear sense of purpose. The subdivisions all break down into units of two or three paragraphs, so readers are never far from indications of where they are in the structure of the paper, and no paragraph is so long that readers get lost in a paragraph and forget its place in the plan of the whole paper.

Let me turn your attention now to another essay—this one written by a professional in the humanities. It is a piece written for a collection of essays on film, and it focuses on the religious vision in the three *Godfather* films (which I'll abbreviate below as *GF I*, *II*, and *III*). It is only three paragraphs longer than the Brontë essay but about 1,600 words longer, because the paragraphs average 170 words in length. The thesis, which appears at the end of the fifth paragraph, reads as follows:

> Both myth and ritual, I hope to demonstrate, are integral to the narrative structure and the symbolic fabric of *The Godfather* films. (May 68)

As you read through the outline of the essay's organization, compare it to the outline of the Brontë essay in strategy and complexity.

Paragraph 1	Why viewers avoid facing Michael Corleone's evil	Introduction
Paragraph 2	Connections to the story of Adam and Eve	
Paragraph 3	Crime syndicate as a metaphor for America	
Paragraph 4	Crime syndicate as a metaphor for America	
Paragraph 5	Crime syndicate as a more universal metaphor (thesis)	
Paragraphs 6–9	Ironic use of religious ritual in *GF I*	A. Ritual and myth in *GF I*
Paragraph 7	Ironic use of religious ritual in *GF I*	
Paragraph 8	Ironic use of religious ritual in *GF I*	
Paragraph 9	Ironic use of religious ritual in *GF I*	

Paragraph 10	Religious ritual as frame in all three *GF* movies	B. Ritual and myth in *GF I, II,* and *III*
Paragraph 11	Sacramental setting in *GF I, GF II,* and *GF III*	
Paragraph 12	Ritual and myth in *GF I*	
Paragraph 13	Ritual and myth in *GF II*	
Paragraph 14	Ritual and myth in *GF III*	
Paragraph 15	Ritual and myth in *GF II*	C. Ritual and myth in *GF II*
Paragraph 16	Ritual and myth in *GF II*	
Paragraph 17	Ritual and myth in *GF II*	
Paragraph 18	Ritual and myth in *GF II*	
Paragraph 19	Ritual and myth in *GF II*	
Paragraph 20	Ritual and myth in *GF II*	
Paragraph 21	Ritual and myth in *GF III*	D. Ritual and myth in *GF III*
Paragraph 22	Ritual and myth in *GF III*	
Paragraph 23	Ritual and myth in *GF III*	
Paragraph 24	Ritual and myth in *GF III*	
Paragraph 25	Greatness of religious imagination in the *GF* films	Conclusion

The broad architecture of the essay follows what is promised in the thesis. This thesis does not, as does the thesis of the Brontë paper, present a logically structured argument. It simply says myth and ritual are important in all three films; that is an assertion that does not call for much argument. The essay becomes interesting and important through the details it presents to elaborate on the thesis and to show how pervasive and thoughtful is the use of religious myth and ritual in the three films. So the simple large-scale organization carries the weight of the complex and richly detailed subsections.

A few additional observations come to mind. First, we see that the introduction is relatively long—it takes five paragraphs to get to the thesis. The author expends a relatively large percentage of his paragraphs to move to a fairly simple thesis because he wants to focus our attention on *details*—the rich fabric of themes, images, symbols, and tones through which he discusses the narrative structure.

Second, it would seem that section B would normally precede section A—that an introductory and comparative discussion of all three movies would come before rather than after the detailed examination of the first movie. But in this case the specifics of *The Godfather* (*GF I*) in section A are used to set up the more wide-ranging discussion of all three of *The Godfather* movies in section B.

Third, the essay is much more complex than the outline makes it seem. You may, in fact, have noticed that I included less detail in this outline than in the outline of the Brontë essay. It is hard to summarize concisely the points of this essay's individual paragraphs, so I just indicated the general subject of each paragraph. The organization of subsections and of individual paragraphs, as they range into a web of relationships among the extensively detailed ideas, is subtle, sometimes not at all obvious, but effective (and we will look more closely at a subsection and paragraph later).

Typical Features of Large-Scale Organization in the Humanities The body sections of most essays in the humanities are divided into two to five first-level subsections; each first-level subsection is divided into two to five second-level subsections, and so on. So each organizational building block asks readers to hold on to a relatively small number of parts.

As I stated earlier, unlike writing in the other three disciplinary groups, essays in the humanities do not employ headings, numbers, or other visual clues to mark off sections. Paragraph indentations are thus the only visual clue to identifying the number and length of blocks of thought. And we do find some consistency in the length of paragraphs in the humanities. Professional essays, which are generally more complex than students' essays, average about 6,000 to 10,000 words in length (twenty-five to forty 250-word pages). Ten sample essays from professional journals in literature, music, art, and cultural studies (and I scanned dozens of other essays to help confirm the numbers in this small sample) contained paragraphs that average 170 words per paragraph. No essay averaged more than 220 words or less than 120 words per paragraph. Twenty student essays in the humanities (all of which received A's) averaged 120 words per paragraph, and there was not much difference between longer papers (ten to twenty 250-word pages), which averaged 130 words per paragraph, and shorter papers (two to four 250-word pages), which averaged 115 words per paragraph.

The point is that at the paragraph level of organization we find a fairly consistent limit on the number of words readers are asked to process. That is to say, as you move from a four-page essay to a forty-page essay, you increase the number of levels of subsections; you do not significantly increase the length of each paragraph. A four-page, 1,000-word essay might be arranged as in the following example.

I. Introduction—1 ¶ (100 words)
II. Body—5 ¶'s (825 words)
    A. ¶ (200 words)
    B. ¶ (175 words)
    C. ¶ (150 words)

        D. ¶ (175 words)
        E. ¶ (125 words)
    III. Conclusion—1 ¶ (75 words)

Individual paragraphs make up the first-level subsections.

If, however, we were to move up to a forty-page, 10,000-word essay, the number of levels of subsections would increase, but the number of paragraphs per subsection and words per paragraph probably would not. So we see in the following partial model that part II.A.1. of this hypothetical 10,000-word essay is subdivided like the whole body (section II) of the above model.

I. Introduction
    A. ¶ (148 words)
    B. ¶ (100 words)
    C. ¶ (180 words)
    D. ¶ (150 words)
II. Body—50 ¶'s (8,500 words, divided into subsections A, B, and C)
    A. 18 ¶'s (3,000 words, divided into subsections 1, 2, 3, and 4)
        1. 5 ¶'s (800 words)
            a. ¶ (180 words)
            b. ¶ (140 words)
            c. ¶ (100 words)
            d. ¶ (220 words)
            e. ¶ (160 words)

Writers in the humanities break their work into manageable blocks—organizational units that do not ask readers to remember too much about where they are in the structural plan of an essay. The writers let the readers know what to expect and give them clues along the way to tell them where they are.

Exercise 8.5 Analyzing and Revising for Thesis and Organization

The following is an essay about a poem titled "Break, break, break," by Alfred, Lord Tennyson. The student who wrote the essay told me that it did not have a thesis and was therefore not organized like a thesis-based paper. No thesis appears in the first paragraph. But is there an implied thesis? Analyze this essay to determine if it has an implied thesis. If you think it does, write down the thesis and explain how the organization of paragraphs defends that thesis. If you think there is not an implied thesis, develop one; then organize the paragraphs to support that thesis. In order to do so, you may have to leave out some of the paragraphs or add ideas for new paragraphs.

First read the poem that the essay interprets.

Break, Break, Break

Alfred, Lord Tennyson

Break, break, break
  On thy cold gray stones, O sea!
And I would that my tongue could utter
  The thoughts that arise in me.

O, well for the fisherman's boy,
  That he shouts with his sister at play!
O, well for the sailor lad,
  That he sings in his boat on the bay!

And the stately ships go on
  To their haven under the hill;
But O for the touch of a vanished hand,
  And the sound of a voice that is still!

Break, break, break
  At the foot of thy crags, O sea!
But the tender grace of a day that is dead
  Will never come back to me.

Here is the essay.

What the Waves Said

1 Tennyson's brief lyric “Break, break, break” is a sober, sorrowing elegy on the death of his friend Arthur Hallam. Melancholy is indeed the poem's dominant mood, but its opening sentiments are closer to despair, a despair later replaced by the accepting melancholy of memory. In the following pages I offer a concise account of the poem's structural and emotional progression, and consider “Break, break, break” in light of three other Tennyson poems.

The thrice repeated and stressed “Break” of the first and last stanzas rhythmically dominates the poem, slowing the pace and sharpening the emotional message. In the other 14 lines, lilting anapests and iambs predominate, mimicking the continual rise and fall of waves. By my count, all but 11 of the poem's 110 words are of one syllable, and most of these 11 are trochaic rhythm breakers (e.g., “utter,” “vanished,” “never”). By continually disrupting anapests with trochees, the poem's very structure resolves the tension between a soothing meter and a disconsolate message. Consider, for example, the poem's last two lines: the trochaic “tender” leading to the stressed “grace” is followed by two perfect anapests. And in the final line an amphibrachic foot stressing “never” leads to the two concluding iambs. “Never” perhaps best encapsulates the poem's message, and the meter emphasizes it masterfully.

"Break, break, break" explores the difficulty of expressing despair. The speaker wishes that his "tongue could utter / The thoughts that arise in me," but putting true despair into words is a task made impossible by the overwhelming nature of his hopelessness and a recognition of the futility of capturing nebulous feeling in finite and limiting words.

5 Besides introducing the reader to the poem's struggle for expression, the first stanza establishes the sea as a dominant image. Perhaps the speaker is gazing at the sea, watching the continual crash of the waves upon the shore and feeling its appropriateness for his own state of mind. Finally, the first stanza leaves the reader with an obvious question: What are these unutterable thoughts? And will they remain forever so?

The second stanza is in sharp contrast to the first. With something between resentment and regret Tennyson describes a carefree life unaware of the sorrows of the speaker's world. In lives free from the pain of experience, shouting and singing are the proper forms of expression, not melancholy poems on the past and the difficulty of communication.

The third stanza is perhaps the most enigmatic. The "And" with which it begins links the stately ships to the prior stanza's images of carefree innocence. The linkage is supported by the progression from "fisherman's boy" to "sailor lad" to the "stately ships" upon which such a boy is likely to sail when grown to man. Additionally, a haven from life's tragedies recalls the safe world of the second stanza. Yet the "And" which begins the third stanza is still puzzling; I'll return to it later.

The latter part of the third stanza is a definite break from the preceding images, indicated by the "But." The speaker rejects a life of innocence and refuses to be comforted; he still longs ". . . for the touch of a vanished hand, / and the sound of a voice that is still!" Is this the expression of despair whose unutterability Tennyson declared in the first stanza? I'm not sure, but these words do *begin* to answer the poem's initial question, for now the speaker touches the core of his grief: his knowledge that the past is forever lost.

And so we return to the poem's opening image, but both speaker and listener return with new knowledge. A realization of the irretrievability of the past is the source of the poet's grief, and by acknowledging this he gains strength: the continually breaking waves can be countered with a "But" instead of succumbed to with an "And" as in the despairing first stanza. The sea may painfully remind the poet of bygone days, but he can now state with emphatic sadness that ". . . the tender grace of a day that is dead / Will never come back to me." The poem's final sentence—and its only declarative statement—is thus a more confident reassertion of the realization reached in stanza three, and a mature transcendence of both the overwhelming pain of the poem's opening and its carefree days of inexperience.

10 It is easy to overstate this point: "Break" is not a joyous or optimistic poem. But it is a progressive emotional journey in which melancholy memory replaces paralyzing despair.

The poem consists of a series of circular or repeating images: At the poem's opening the speaker is standing near the shore observing the crashing waves; in the second stanza his world widens to include the fisherman's boy playing (probably farther down the beach), then the bay, and finally the wide sea itself before returning to the more immediate breakers. The poem's other characters also function as images of return; the children will return to their home, the sailor lad will return to the shore. Go and come. There is the continual forth and back motion of the waves. And of course through his poem the poet returns—at least in memory—to the days before Hallam's death. Yet in this world dominated by return, the stately ships "*go on* / To their haven under the hill." This directed linear motion contrasts strikingly with all other movement in the poem. If repetition is an attempt to go back in time, linear motion is perhaps forward time-movement. The haven toward which the ships travel seems to represent safety from the sea of life and experience; and a port may appear, from a distance, to be "under the hill"; but perhaps Tennyson had in mind a more metaphorical usage, as in "under the earth." If so, the ships sailing to their haven become an image of death. (There are great speculative possibilities here: *Morte d'Arthur,* celebrating one Arthur's properly ceremonial departure by ship, was published in the same volume with "Break" which mourns another Arthur's untimely death.)

If the stately ships do represent death in some form, they may explain the "And" which links stanzas two and three. Death (or suicide, or the stately departure Tennyson is providing for Hallam through his poem) is linked by "And" to carefree ignorance. I claimed earlier that the middle stanzas consider alternatives to the poet's reality. Yet naiveté is no longer a possibility, and the poet now uses "But" to discard death's forgetfulness as well; he remains, sorrowing, at the water's edge.

But: None of this speculation answers the questions of the first stanza. What are those unutterable thoughts, and has the poet in fact uttered them?

Surely some progress has been made. With an assertive "never," the speaker has declared the impossibility of recovering his days with Hallam. Such candor is a dramatic loosening of the opening stanza's mute tongue. But is an affirmation of loss the only thought Tennyson wished to utter? Or are there still, at the end of the poem, unreleased sentiments?

15 To suggest an answer, I would like to allude to three other poems, two written prior to Hallam's death ("Supposed Confessions" and "The Two Voices") and one afterwards (*In Memoriam*).

Though the "Supposed" of the title distances the poem's speaker from Tennyson himself, "Supposed Confessions of a Second-Rate Sensitive Mind" is a personal struggle with doubt, faith, and knowledge: "Why pray / To one who heeds not, who can save / But will not?" (lines 89–91). This rhetorical question is never really answered, and the rather chaotic poem ends in irresolution: "O damned vacillating state!" (190).

"The Two Voices" records a debate about suicide (recall the possible allusion to suicide in "Break") between two sides of the self. A "still small voice" asks, "Were it not better not to be?" and calls the poet a "divided will." The main argument of this pro-suicide voice is essentially the insignificance of humankind's place in the universe (lines 25–33). In response, the poet suggests philosophical idealism (134–41), an innate idea of Heaven (290–97) and reincarnation (346–69). The poem ends on a cautiously hopeful note: the still small voice departs, but the poet resolves to "commune with that barren voice" rather than with one which denies the tragedy of life. Thus there is a progression in "The Two Voices" not present in "Supposed Confessions."

In Memoriam, like "Break, break, break," has a different tone from that of the poems written before Hallam's death. The poet's struggle with grief and faith and doubt, artificial and academic in "Supposed Confessions," is heart-rendingly real in *In Memoriam.* Yet whether *In Memoriam* moves beyond either the earlier poems or "Break" in emotional and intellectual maturation is uncertain. Although it concludes with a seeming embrace of Christianity and love, the path by which it arrives is nowhere clear.

In Memoriam is certainly a more detailed expression of grief than "Break," though whether it moves emotionally beyond the simple elegy is also unclear. But perhaps "Break, break, break" is a prelude to *In Memoriam.* In Section V Tennyson asserts, "I sometimes hold it half a sin / To put in words the grief I feel," which emphatically reminds us of "Break's" unutterable thoughts. Yet *In Memoriam* does put grief into words, a grief more completely and lovingly expressed than anything in "Break." And indeed, in Section XIX Tennyson seems almost to acknowledge the role "Break" played in transcending his paralysis and enabling the creation of *In Memoriam:*

> The Wye is hush'd nor moved along,
> And hush'd my deepest grief of all,
> When fill'd with tears that cannot fall,
> I brim with sorrow drowning song.
>
> The tide flows down, the wave again
> Is vocal in its wooded walls;
> My deeper anguish also falls,
> And I can speak a little then.

Organization within Sections, Subsections, and Paragraphs

Let's look at one subsection and a paragraph within that subsection from both the Brontë essay and the *Godfather* essay. We need to see if large-scale organizational strategies also guide organization on the smaller scale.

Organization within Sections and Subsections Paragraphs 13 through 15 of the Brontë essay make up the subsection labeled B.3. The order depends on a logical sequence.

> ¶13 Critics were right about structure of the plots, but wrong to say that loose, complex plots weaken the novels
>
> ¶14 In fact, the critics faulted Brontë's realism
>
> ¶15 Readers' response to the realism strengthens the novels

Paragraph 13 recapitulates the argument that had been established earlier; paragraph 14 explains the essence of the reason for the critics' mistake; and paragraph 15 climaxes with the author's main point of disagreement with the critics.

The logical arrangement continues within individual paragraphs. Consider the climactic fifteenth paragraph (I've put each sentence on a new line to help illuminate the flow of thought):

> Because Brontë's characters exist in a world that is so much like the real world [unpredictably "loose" and complex], the characters themselves become more lifelike.
>
> Because the characters are realistic, the reader is better able to sympathize and form relationships with them.
>
> Sympathy and strong relationships with the characters make the reader better able to experience the "exquisite feeling" and the "strength and delicacy of emotion" that the critics said they so enjoyed.
>
> With a tightly contrived plot structure the power of the emotional effects would be diminished.
>
> Contrary to the critics' claim, Brontë's choice of plot structure actually strengthens her books.

The use of the word *because* in the first two sentences enforces a cause-and-effect logic that drives us to the concluding sentence, which is probably the most important sentence in the essay.

In the *Godfather* essay, the large-scale organization depends less on explicit logical sequence than does the Brontë essay; instead, the author surrounds us with images of ritual and myth in the three *Godfather* films, presented chronologically. The same is true of the smaller-scale organization. Section B, paragraphs six through nine, for instance, focus on the religious rituals and myth in *The Godfather* (first of *The Godfather* movies). Let me try to summarize the content of each of those paragraphs. (If you have not seen the film, it will be helpful to know that Michael Corleone is head of a powerful mafia "family." Toward the end of the film, as he takes part in a ceremony of baptism for his nephew because he is the child's godfather, the scene cuts back and forth between the baptism and a series of murders. In the movie's final scene, Michael's wife, Kay, asks him if he has murdered his brother-in-law [the father of the child just baptized]. He lies and tells her no; then his office door closes her out as mafia chieftains kneel and offer allegiance to their new godfather.)

> ¶6 The ironic use of religious ritual culminates in the baptism/murder scene at the end of *GF I;* the baptism includes a threefold renunciation of Satan, performed by Michael.
>
> ¶7 The threefold renunciation of Satan is interwoven with the expulsion of Michael's enemies—his own demons; Michael's baptism is thus not of water and truth, but of blood and lies, "signaling the demonic bond of hypocrisy" joining the human family.
>
> ¶8 The threefold pattern also appears as Michael performs three "excommunications" of disloyal family members.
>
> ¶9 Michael's lie to Kay also takes the form of a threefold ritual; as the door closes on Kay, we see that we, too, "may be outsiders to the family business, but not to the family."

The section is thus organized both by its focus on a pattern of "threefold rituals," presented in the order in which they appear in the movie, and by its focus on the word *family.* As the essay moves chronologically through the movie, it collects examples and couches those examples in statements (softly interjected at the end of paragraph seven and then forcefully spoken in the subsection's final sentence) that carry the reader to the central idea—that the Corleone family represents the human family.

Organization within Paragraphs Writers in the humanities often build individual paragraphs on plans similar to those of individual sections, such as those that we looked at above. I list below the sentences from paragraph seven of the *Godfather* essay in section B, which we outlined above. Watch the way in which the first thirteen of the paragraph's fourteen sentences gather details, sprinkling them with reminders of how they fit into a threefold pattern (I've italicized forms of the word *three*) and finally suggesting that the details should be interpreted as "signaling" something true about "the human race."

> The *threefold* renunciation of Satan is the final act of the exorcism that precedes the actual baptism.
>
> "Michael Francis Rizzi," the priest asks the infant—and from this point on, we see the godfather as we hear the priest—"do you renounce Satan?"
>
> (Cut to Victor Stracchi gunned down as he steps out of an elevator.)
>
> Michael Corleone says without emotion, "I do renounce him."
>
> (Moe Green, on a massage table, is shot through the lens over his right eye.)
>
> "And all his works?" the priest continues.
>
> (Carmine Cuneo is riddled through the glass of a revolving door.)
>
> Michael answers, "I do renounce them."
>
> (Philip Tattaglia and his mistress are strafed through the sheets on their hotel bed.)
>
> "And all his pomps?" the priest asks finally.
>
> "I do renounce them" is Michael's *third* expressionless protestation.
>
> (The cut, climactically, is to Emilio Barzini's assassination as he descends the courthouse steps to his waiting car.)
>
> The ritual expulsion of demons—that is to say, enemies—completed, the priest asks, "Michael Rizzi, will you be baptized?" The godfather responds, "I will," and after a brief shot of the priest pouring water on the infant's head, there is a rapid *triple* cut to scenes of carnage (hotel bed, revolving door, and courthouse steps) corresponding to the priest's voice-over invocation of the *Trinity* ("in nomine Patris, et Filii, et Spiritus Sancti").
>
> Michael Corleone's *threefold* renunciation is a solemnized lie signaling the demonic bond of hypocrisy that holds together the human race; the matter and form of his sacrament of rebirth as the godfather are not water and the Spirit of truth, but blood and deception.

The organization of this long (271 words) paragraph echoes that of the scene in the movie, rapidly accumulating striking details in order to overwhelm our senses with meaning. But the paragraph adds, in its last sentence, a statement of one of the essay's main points.

Remember that the point of writing in the humanities is not to *prove* a point with absolute certainty; rather, it is to share ideas that are interesting, that illuminate and enrich our understanding—of books, films, music, and so on. Both examples we have studied, on both large and small scales, use organization to nudge us toward a richer understanding of the works of art they study.

The Brontë essay relies on a tight logical structure that applies general principles to the particular case of Brontë's novels—following a deductive model of reasoning. The real point of the essay is not to prove that the author is right and Brontë's contemporary critics were wrong, but to use the backdrop of history to illuminate the effectiveness of Brontë's plots in creating emotional attachments between readers and the novels. You probably noticed that the essay does not end with the climactic point that concludes the fifteenth paragraph; the last paragraphs of the essay are given to examples—the details through which we concretely understand and experience the validity and value of the argument.

The *Godfather* essay accumulates details about the symbolic use of religious ritual and myth (in this way it seems inductive in its reasoning). It calls on its wealth of careful observations (convincing us that the films use ritual and myth extensively and purposefully) to enrich our appreciation of the films. It fires our interest in the details of the films and inclines us to see our own human family reflected in the Corleone family.

Exercise 8.6 Organizing a Paragraph

Here is the twenty-first paragraph from the student essay on Brontë. The sentences are scrambled. Rewrite the paragraph, organizing it and adding transitions and other devices for improving coherence. Explain your reasons for organizing as you do.

> **[1]** The reader forms a strong emotional bond with the characters. **[2]** The critics were rendered unable to recognize the important contributions that Brontë's loose plot structures make to the emotional force of her books. **[3]** Brontë's critics were attached to the notion that her books should conform to a set of strict characteristics for the novel. **[4]** The loose plot structure makes the world of her books like the real world. **[5]** The characters in the books become real for the reader. **[6]** Brontë's contemporary critics felt the emotional bond. **[7]** Brontë's use of a loose plot structure gives her permission to include in her novels incidents that do more to develop the characters than they do to advance the plot.

Coherence

What I said about the fundamentals of coherence in Chapter 7 largely applies to coherence in the humanities. Coherent essays in the humanities have effective transitions, but they convey a sense of unity and flow primarily through focus and organization. If a writer clearly establishes a thesis and logical plan in the introduction, readers will know what to expect—what their attention will be focused on and how the essay will be organized. The writer who crafts an effective introduction, maintains focus, and follows a purposeful organizational plan is a writer who needs only to provide the occasional reminder and directional signal.

A writer does not even have to employ explicit reminders. Readers of the *Godfather* essay, for example, are given a clear sense of the overall plan, so they need only a hint of the content of a paragraph—for example, a mention of which *Godfather* movie is being discussed—to know where they are within the plan. The same is true of the Brontë essay. Look again at the content of the three paragraphs that make up subsection B.3:

¶13 Critics were right about structure of the plots, but wrong to say that loose, complex plots weaken the novels

¶14 In fact, the critics faulted Brontë's realism

¶15 Readers' response to the realism strengthens the novels

The content evokes a logical flow and thus creates coherence.

Writers must also provide the directional signals that help readers to follow along, sentence by sentence. Paragraph eight, which begins the section that I have labeled "What the critics got wrong," opens with the word *Although* ("Although reviewers praised Brontë for . . . , they also criticized her . . ."). It signals—clearly, yet unobtrusively—the change in direction.

At other times a more explicit transition works best. The subsection (B.3) that contains the heart of the writer's argument begins with this sentence subject: "The problem with the critics' discussion of Brontë's books. . . ." This sentence subject loudly declares its intention to assert the main problem of Brontë's critics. Introducing an important new section calls for this explicit transition.

Exercise 8.7 Revising to Improve Coherence

Here is a critical essay written by a music student. I have changed the essay, sometimes cutting out transitions, sometimes creating poor transitions. On a separate sheet of paper (1) write down the number of each sentence in which you see the need to revise in order to improve coherence, (2) explain the problem, and (3) and rewrite the sentences. (You may also note that the conclusion of this essay is very similar to the main point of this book.)

> **[1]** Analyzing twentieth-century music has been good for me. **[2]** I am so accustomed to both the simplistic harmonies of popular music and to the Major/Minor tonalities of the "common practice period" that

any music that does not fit into these categories seems aurally unintelligible. **[3]** The genius of Webern and Cage is just not as easily recognizable as that of Mozart and Chopin.

[4] A listener with no musical knowledge can be moved when *Isolde's Liebestod* washes over him, or excited when she hears the first four bars of Beethoven's *Fifth Symphony.* **[5]** When I first listened to Webern and Cage, however, I thought that their music was chaos. **[6]** I only learned to understand them by learning the techniques for analyzing twentieth-century music.

[7] Using those techniques taught me that the music of composers like Webern and Schoenberg is often "all theory"—with every note, rhythm, and dynamic fitting into the musical map. **[8]** Every jot and tittle is accounted for. **[9]** No great music is written without some plan or format, but taking control to too great lengths can destroy music. **[10]** Sheer genius of organization and mastery of new techniques is not the ultimate criterion for a musical masterpiece. **[11]** Composers must be careful not to allow notes in a phrase to become mere numbers in a mathematical formula. **[12]** Too many rules stifle the life of the music.

[13] I also learned that music, such as that written by Cage and Crumb, can be damaged by abandoning all the rules. **[14]** By flirting with complete musical freedom, the avant-garde composer paradoxically leaves the performer no freedom. **[15]** What room for interpretation lies in exactly 4′33″ of silence or a direction to drop a toaster? **[16]** When a composer like Crumb goes so far as to manipulate not only the score but the instruments, real freedom is lost. **[17]** In this wild experimentation and boundless rule breaking, composer and performer are caged. **[18]** Although Cage and Crumb are regarded as free spirits, their music sets no one free.

[19] In short, learning how to analyze twentieth-century music has taught me to evaluate twentieth-century music. **[20]** I believe that real music is born through a balance of rule following and rule breaking. **[21]** When twentieth-century musicians go too far in either direction, they turn music into something it is not meant to be.

Exercise 8.8 Organization in the Humanities

In your library or from any other sources you can locate, find examples of organizational formats used in writing in the humanities. Look for examples of the traditions discussed in the preceding section, modifications of those traditions, and nontraditional organizational plans. Analyze the reasons for and the effectiveness of the organizational plans of three different pieces of professional writing in the humanities.

WORKSHOP 10

Organization and Coherence in the Humanities

In this workshop you will consider Colleen's questions and choices about organization and coherence. If you want to review the assignment for Colleen's paper, it can be found in Chapter 2, page 23. You will also need to refer to the complete text of Colleen's paper in Chapter 2 in order to complete this workshop.

COLLEEN'S QUESTIONS ABOUT ORGANIZATION AND COHERENCE

Colleen's journal comments about organization reflect her decision to change the focus of her essay (see Workshop 1, Chapter 2). Her several questions on focus (Workshop 1) are, in effect, questions about organization, and her comments here show how intimately connected are decisions about focus and organization. Having made her major decision about focus, Colleen's choices about organization seem to have fallen into place. What she wrote in her journal, therefore, were statements explaining her organization rather than questions about it.

- When I shifted my focus, I decided to follow the Queen in the order of the plot of Hamlet—showing how her loyalty to her son builds as the story moves on. I stayed with this organization all the way through—it was easiest, and it conveniently and naturally created a sort of climax, so that I could conclude where *Hamlet* concludes (the poisoned cup). I thought it was a bit elegant.
- The Quarto discussion became tucked into a brief background section after the introduction. I felt I must pay some attention to it, as it set up my thesis.

COLLEEN'S OUTLINE

Once Colleen had fixed her decision "to follow the Queen in the order of the plot of Hamlet—showing how her loyalty to her son builds as the story moves on" and how Quarto 1 offers better evidence of that loyalty than does Quarto 2—she seemed to need no other guide. The following outline was written after the paper was drafted; its divisions are based on the content of the paragraphs.

Introduction
    ¶1, ¶2 (The thesis appears at the end of paragraph 2.)
A Comparison of Act III, Scene iv, Quarto 1 and Quarto 2
    ¶3, ¶4, ¶5, ¶6, ¶7 (Discussion of the early and middle parts of the scene.)
    ¶8, ¶9, ¶10 (Discussion of the final part of the scene.)

A Comparison of Act IV, Scene v, Quarto 1 and Quarto 2
¶11
Conclusion, the Play's Final Scene (Act V, Scene ii), Quarto 1 and Quarto 2
¶12, ¶13 (The thesis is reiterated in both paragraphs.)

ANALYSIS AND REVISION OF THE LARGE-SCALE ORGANIZATION

This outline confirms what Colleen wrote in her journal—she followed the order of key scenes in the play to organize her essay. Read through Colleen's essay to see if there are principles at work in organizing the essay other than the chronology of scenes. What reason, if any, is there for the apparent imbalance between the parts of the essay (eight paragraphs on Act III, Scene iv and only one paragraph on Act IV, Scene v)? What changes would you suggest in the large-scale organization of the report? Why?

ANALYSIS AND REVISION OF ORGANIZATION WITHIN SECTIONS

Analyze the organization of the subsection made up of paragraphs eight through ten. Explain why you think it is organized as it is, and suggest any revisions that you think would better accomplish the purpose of the section. Comment on both the organization and coherence of the three paragraphs within the subsection and the organization and coherence of sentences within each paragraph.

> The Q1 Gertrude's loyalty to her son is further demonstrated at the conclusion of the scene, when Hamlet finally makes a direct request of her in his plot against the king. In Q2 he asks her to stay out of the king's bed and to act as though she had not spoken with Hamlet, continuing to plead her son's sanity to the king. Says Hamlet, "Make you to ravel all this matter out, / That I essentially am not in madness" (III.iv.186–87). The queen, no doubt relieved at the prospect of forgetting about the entire closet scene, complies: "Be thou assured . . . I have no life to breath / what thou hast said to me" (III.iv.197–99). Thus the scene is concluded and the queen's focus is still on the uncertainty of Hamlet's madness. 8
>
> In Q1, Hamlet reveals that he believes he can trust his mother (and she him) when he forms his request, and he is confirmed in that assumption when she replies in utter loyalty: 9
>
> *HAMLET:* And mother, but assist me in revenge,
> And in his death your infamy shall die.
>
> *QUEEN:* Hamlet, I vow by that majesty,
> That knows our thoughts, and looks into our hearts,
> I will conceal, consent, and do my best,
> What stratagem soe're thou shalt devise. (III.iv.103–08)

> Now all the cards are on the table. Gertrude knows that her son means to kill the king, and his promise that her assistance in this murder will wipe away the "infamy" of her love for Claudius speaks to her. In her response she makes the choice to follow the side of her heart that loves her son (a decision which the Q2 Gertrude never clearly makes in either direction).
>
> 10 In his farewell line, "It is enough, mother good night" (III.iv.109), the Q1 Hamlet concludes the closet scene with a peaceful air which is missing from the Q2 scene, where it remains unclear if his pleading reached through to his mother. He knows that he can trust her, and she will prove him correct. This entire scene in Q1 provides a much better preparation for the king's subsequent discovery of the dead Polonius. Ready to stand by her son, the Q1 queen may without hesitation clear his name by telling the account of the "mistaken rat." Although this defense of Hamlet occurs in both texts, the Q2 account provides much less explanation of her inner motivation, and the scene has less impact; alternatively, the context of the Q1 account highlights this scene as proof of the queen's sincerity in her chamber encounter with her son.

ANALYSIS AND REVISION OF COHERENCE

Explain the techniques that Colleen's paper uses to create coherence. Give examples of two or three techniques that lend coherence to the overall structure and of two or three techniques that improve coherence within sections, subsections, or paragraphs.

Questions for You

Having thought about organization and coherence in Colleen's paper, what questions would you ask about organization and coherence if you were revising the whole paper? Do you have any remaining general or specific questions about the principles of organization and coherence in the humanities? If you do, write them out for your teacher to see.

NATURAL SCIENCES

As we've noted earlier, most papers in the natural sciences follow a strictly prescribed order. Reports of experimental research, which scientists commonly call "papers," include the following five sections: Abstract, Introduction, Materials and Methods, Results, and Discussion. Laboratory reports and poster projects—two types of writing students often compose—also follow this order. It is, as we have noted in earlier chapters, called the IMRAD plan, an acronym for the four main parts of the paper, excluding the Abstract.

Do not, however, make the mistake of thinking that organizing scientific papers is easy. When you devise an organizational plan and do not have to follow any rigid guidelines, as you might do for an essay in a literature class, you usually do so by analyzing what you have to say and how many parts it falls into. But scientists must fit whatever ideas and information they have gathered—no matter how simple, complex, or lengthy—into the prescribed arrangement of parts, and doing that can be challenging.

A group of biology students (another of the groups studied by Walvoord and her colleagues) found that the IMRAD organizational plan did not make organizing papers easy. They did not know what professional scientists must know: what should be included and excluded in each section, which information belongs in which sections, and which sections may repeat what material from other sections.

Additionally, a scientist has to be able to organize the material within each of the five main sections (each of which can be longer and far more complex than a typical first-year composition essay) and to observe the traditions about the contents and order of each section.

Those problems define our work for this part of Chapter 8. We will first study the purpose and content of each of the five main sections in order to understand large-scale organization of scientific papers. We will also take a brief look at large-scale organization in scientific review essays. That will prepare us to consider options for arranging the parts within each of the main subsections of scientific papers. Finally, we will examine the nature of coherence in natural science writing—you may be surprised to learn how differently natural scientists and first-year composition teachers think about transitions.

Large-Scale Organization

When Walvoord and her colleagues studied the group of biology students mentioned above, they found that students tended to think that the order of the five main sections in scientific papers dictated the order in which they had to write those sections. So they tried to write Abstracts and Introductions first, before they knew what the paper would finally have to say. Jone Rymer, who analyzed the writing processes of several successful scientists, discovered the following typical order for writing:

1. the figures (graphs and tables),
2. the Materials and Methods section and the Results section,

3. the Title and Introduction,
4. the Discussion, and
5. the Abstract. (Rymer 223)

Both scientists and people who study scientists' writing tend to think of the overall arrangement of a scientific paper as a story. In fact, one of Rymer's scientists, when talking about an article that he was especially proud of, said, "It's a beautiful story." Imagine the Introduction to be the part of the story that tells what happened in the past that created a need for the present study; the Materials and Methods recounts what was done in the present study; the Results section reports on the data gathered in the study; the Discussion concludes the story by explaining what was learned and how that knowledge anticipates and directs future studies. You see how the pieces fit together in chronological order.

But such scientific stories have this in common with a novelist's stories: The final product does not reflect the road the writer takes to complete the product. Novelists may begin with a single image (which might appear anywhere in the final draft), then plan the conclusion, draft a chapter in the middle, and so on. And then they could go back and rearrange the plot after finishing a first draft. Scientists may go through similar processes. Another of the scientists Rymer studied made this telling criticism of scientific writing:

> In writing papers, scientists go back and rewrite the history of the experiment. . . . They don't recognize the accidents, the intuitions, the leaps of faith, the sudden connections.

It troubles me a little that this scientist seems to fault his colleagues for not recognizing the messy parts of an experimental process. Scientists may in fact recognize all the messiness, but they cannot include it any more than a novelist can. They retell the story not to deceive themselves or their readers (though that can happen) but to make the story clear and purposeful.

Another complication for apprentice scientists is that different sections are usually written by different people on the research team. The team leader may work only on the final revisions and editing. That makes it even more necessary for each team member to know what belongs and does not belong in each section and how each section should be organized so as to move toward the next section.

One final note about IMRAD organizational plans. Many journals are now placing the Materials and Methods section at the end of the papers they print, almost as if the section were an appendix. This appears to be a trend in current scientific publications, and although most journals still follow the traditional IMRAD format, you should be aware that the conventional format seems to be changing and be prepared to adapt.

Content and Purpose in the Major Sections of a Scientific Paper The following paragraphs sketch the basic purpose and form of the sections of scientific research papers.

Abstract Informative Abstracts are used for regular research articles. Basically, they briefly summarize each of the five main sections—in order and in only a sentence or two. They indicate the purpose and possibly the history of the study (corresponding to the Introduction), describe the methods (Materials and Methods), summarize the data collected in the experiment (Results), and announce principal conclusions and implications (Discussion).

If the focus and purpose is established in the title and if the audience of a highly specialized journal can be expected to know why the topic is worth studying, the Abstract may move straight into a summary of what was done in the experiment. For instance, read the opening sentence from an Abstract in the *Journal of Medicinal Chemistry:*

> The (R)- and (S)-2-butylamides of *d*-lysergic acid were prepared and evaluated in behavioral and biochemical assays of 5-HT_2 agonist activity. (Oberlender et al.)

The Abstract moves directly into a summary of methods. Often Abstracts also leave out the conclusions and implications. The core that is almost always included, however, is the summary of the experiment and the findings, the methods and results.

Introduction Because it begins the "story" of a scientific paper, the Introduction presents both a historical backdrop as context for the story *and* the problems that make this story interesting. It introduces readers to, or reminds them of, the current state of knowledge in a field. The *Council of Biological Editors Style Manual,* Fourth Edition, offers the following instructions:

> Orient the research you are reporting to previous concepts and research, possibly by a brief and concise review of the literature that is unmistakably relevant to the specific aims of your research. (10)

(The words "brief and concise" and "unmistakably relevant" would seem, by the way, to indicate that editors of scientific journals probably see a lot of wordy Introductions.) Remember that the general purpose of scientific experimentation is to discover new knowledge about nature in the context of already established knowledge. Many Introductions will therefore begin with a sentence structure like this:

> The structure of ___ has come to be best understood in terms of ___.

The Introduction then uses that background to bring to center stage the main problem of the paper. So it might follow the above opening with a statement such as this:

> The measurement of ___ remains difficult, however, because ___.

This sentence does not try to convince readers that the problem is important; rather, it assumes that people interested in the subject will know its importance. The problem may be implied by announcing the subject. During the years when scientists were debating the structure of DNA, they needed only to mention that subject and which of the theories they were supporting or challenging, and their audience could probably anticipate the questions that they were asking in their experiments.

You could think of the Introduction as a mini-version of a scientific review essay (see page 251), discussing what has been done in order to point toward what could be done.

Materials and Methods The purpose of the Materials and Methods section is to make it possible for others to reproduce your experiment. Even if you do not expect anyone to repeat the experiment, it is necessary to provide the information that would make it possible to do so. Others may try to duplicate an experiment if the results are controversial, or the original scientists may have to run it again themselves. Methods are also important because scientists often use others' methods in their own experiments (many scientific articles, in fact, simply report on new or improved methods for conducting research). But perhaps the most important reason for carefully reporting materials and methods is that scientists evaluate one another's experimental techniques as they read scientific papers. If the audience of a scientific paper judges that the methods are faulty, the results will be looked at skeptically.

Consequently, scientists take care to explain exactly what they did and with what materials they did it. The list below indicates some items typically found in the Materials and Methods section:

- age, weight, sex, supplier, etc. of any plants or animals used,
- drug dosages given to experimental subject,
- exact specifications for, and methods of measuring, chemicals used,
- exact specifications for machines used, often including the manufacturer,
- methods used to calibrate machines,

- diagrams of the experimental design,
- descriptions of all control groups used,
- explanations of all variables considered,
- descriptions of modifications of standard procedures,
- ethical precautions taken (especially when using animal or human subjects),
- precise descriptions of every experimental step,
- descriptions of laboratory conditions—temperature, humidity, etc.,
- data that justify use of certain materials or methods (note that these data go in Materials and Methods, not in Results),
- precise explanations of how results were gathered,
- explanations of all methods used to organize and present results, and
- descriptions of statistical tests applied to data.

The list can vary greatly depending on the experiment. Journals often stipulate special kinds of information to include in Materials and Methods. *Endocrinology,* for instance, a journal in which virtually all papers must include information about hormones used in experiments, gives precise information on finding and reporting reference standards of hormones.

Scientists take care to avoid including any findings in the Methods section, all of which belong in Results. Do not, in other words, write something like

> When ____ was measured, it was *found* that . . .

Neither should you ask your readers to look ahead to any figures located in the Results section.

Simply remember that your audience wants to be able to see that it could replicate your experiment and must, at least, be able to evaluate your experimental design, materials, and procedures. So supply all the information, and no more, that is necessary for those purposes. As you are designing and conducting experiments, keep track of any materials and methods that could influence the results; include that information and nothing more. If you use materials and methods already described in published research (especially if the publication is in a well-known journal), you may refer to those descriptions and not repeat them. But make sure that you give enough information for your audience to be able to visualize your experiment without having to go back and read other publications.

Results When scientists conduct experiments, they collect measurable results: volumes, temperatures, pressures, masses, speeds, and so forth. The collected data are the heart of a scientific paper.

The purpose of the Results section is to present—clearly, concisely, and objectively—the experimental findings. To do that, scientists interweave text (their sentences and paragraphs) with graphs, diagrams, photographs, and so on. The graphics summarize the important data (almost never does *all* the data appear in a paper) and present it in accessible form. The written text further distills the data. The following example is an entire subsection from the Results section of a paper on fruit flies:

> *Time to Pupation*
>
> Table 7 reports the time to pupation for all flies. At 25 °C the treatment flies pupated 4 h earlier than the controls; at 29.5 °C they pupated 3 h earlier. The direct effects of treatment on time to pupation were highly significant (Tables 8, 9), but the treatment-by-temperature interaction effect was not (Figure 9A). Enhanced expression of elongation factor at high temperature did not affect time to pupation (Figure 10). (Stearns, Kaiser, and Hilleshiem 976)

You see how the text summarizes the key pieces of information; it does not attempt to paint the graphics in words. It then refers the reader to the tables and figures for important additional detail.

You should also note that the text does not say what is important about the findings or what the implications are. Any speculation or interpretation goes in the Discussion.

Further, all the data that appears in a paper does not necessarily get placed in Results. Only data that are the findings of the experiment go in Results. If you collect previously published data and use it to design your experiment, that information goes in Materials and Methods; or, if you use published data to help with your interpretation, that goes in the Discussion.

Keeping Results separate from Discussion is sometimes very hard, and some journals allow writers to combine the two sections.

Discussion The purpose of the Discussion is to interpret the results. Perhaps we can better understand its function in terms of the story told by a scientific paper:

> What has been done that makes this story worth writing (**Introduction**),
>
> What we did (**Materials and Methods**),
>
> What facts we collected (**Results**), and
>
> What those facts mean (**Discussion**).

The Discussion says to the audience, "You've just seen the facts [in Results]; now let's talk about them. We'll consider what is interesting, what is surprising or puzzling, and what is important. We will look back to the questions posed in the Introduction and answer them, and we will look forward to future experiments and anticipate new questions."

The Discussion, in other words, shares some of the interpretive strategies of an essay in the humanities. Both analyze the *relationships* among parts. The scientific Discussion asks, How do the various sets of data relate to one another to tell a broader story? How do the data collected in the present study relate to earlier published findings? How do the conclusions reached in the present study relate to the larger field of science and anticipate further study?

Your Discussion will probably be more honest and accurate if you do not write it before you conduct your experiment. What I mean by that silly-sounding statement is that you should not decide ahead of time what you are going to discover and what it means. Professional scientists keep an open mind and prepare themselves for surprises. I remember talking with a professor of mine in grad school; he was a literary critic who had just finished collecting the data in a scientific study of writing and seemed rather depressed that he had not gotten the results he had expected. I told him that when I was a scientist we often failed to collect the findings we anticipated, but we always knew we would learn something interesting from our results, so we tried not to anticipate too much and instead aimed to ask good questions and see what turned up. I did not tell him that he was thinking rather *un*scientifically.

If you hope to tell your audience what you learned, you had better honestly ask yourself what *you* learned. If you make the process of writing your Discussion a part of the process of discovery that is a scientific experiment, you will enjoy the writing more and will probably come up with a better paper.

Large-Scale Organization of a Scientific Review Article Earlier I compared the Introduction of a scientific paper to an abbreviated review essay. Let's turn that around and think of the review as an expanded Introduction. The main difference is that the purpose of the review is not simply to supply the context and point out the justification for one experiment, but to give context and justification for a whole field of study and the many experiments that might follow.

When an Abstract is included with a review essay, it is descriptive. It does not attempt to summarize each main section, but to give a broader description of the purpose and content of the essay. There are no rules for organizing the rest of the essay, and because there is so much freedom, editors of scientific journals—and teachers—will often require a detailed outline in advance in order to see what organizational logic guides the review.

Overall, the structure of a review essay will be chronological, moving from past research to future questions for research. But review writers are not likely to go very far back in time. They would not consider articles written so far in the past that the findings are no longer meaningful, and in science you do not have to go back too far to get to "no longer meaningful." The review that I mentioned in Chapter 2, "How to Be a Fig," was written in 1979 and refers all the way back to articles written in the 1920s, but that is unusual. Often a review will simply pick up on all the research published since the last review appeared on the subject. And if the subject is really important, that may be a matter of only a year or two. In such a case chronology becomes relatively unimportant.

In other words, chronological order may a place to start thinking about organizing a review, but it may not always provide the right model. The following list of headings and subheadings shows how one recent review was organized. The essay addresses the question of whether or not the possibility of a comet colliding with the earth poses enough of a threat that we should take measures to prepare for such a disaster.

- Introduction (not labeled with a heading)
- Impact flux estimates
- Nature of the hazard
    - Fireballs and bolides
    - Locally devastating impacts
    - Globally catastrophic impacts
    - Threshold for a global impact catastrophe
- Hazard analysis
- Perceptions of the hazard
- Risk reductions and mitigation
- Discussion (Chapman and Morrison)

In the Discussion, by the way, the authors turn their interpretation of the research toward an argument that we should consider as ways of dealing with the potential calamity (it does not, by the way, sound unreasonable if you accept the author's statistics: a 1 in 20,000 chance of dying as a result of a comet or asteroid collision, as compared to a 1 in 30,000 chance of dying in a flood!).

Exercise 8.9 Organizing Information in the Appropriate Sections of a Natural Sciences Report

The following sentences come from a student's poster project, which was organized in an IMRAD format. On a separate sheet of paper, write the number of each sentence and indicate in which section (Introduction, Materials and Methods, Results, Discussion) each belongs. If there are sentences that would be inappropriate in any of the sections, mark those "do not include."

To help you understand the paper, here is the Abstract:

> In this investigation honeybee fat bodies were isolated and cultured for periods of one, two, three, and four days. The resulting cells were fixed and embedded for electron microscopy and studied ultrastructurally. Based on ultrastructural observation, cell viability appeared to decrease over the tissue culture time course. The presence of live cells after four days of incubation was determined by electron microscopy results, suggesting that some fat body cells were sustained in culture.

Here is a summary of the paper:

> The experiment was designed to test whether or not fat body cells (from the subject honeybees) could be kept alive (and therefore available for studying the function of iron in the cells) in a cell culture. The main result was that the culture did not do a good job of keeping the cells alive, but some cells did manage to stay viable.

1. Stinger and internal organs were removed and the abdomen isolated.
2. The variety of metabolic functions performed by the fat body cells may account for their rapid deaths.
3. I am convinced that this method of cell culture deserves further study.
4. Despite ultrastructural study by a number of researchers, to date no evidence of sensory connections between the iron-containing trophocytes of the fat bodies and the honeybee nervous system have been detected.
5. Many cells incubated for two- and three-day periods showed massive cytoplasmic and nucleoplasmic deterioration, as in Figures 8 through 10.
6. I decided to conduct this study because I believe it is important to develop a method that will allow us to examine the function of iron in fat body cells.
7. Supplementing the culture medium with additional metabolites to more closely approximate the composition of the honeybee hemolymph may produce increased viability.
8. Figures 3 through 5 represent fat body cells cultured over a one-day period.

Organization within Sections

Abstract The Abstract is easy to organize because it follows the order of the four remaining sections of a scientific paper. Look at the core of each sentence from a published Abstract:

1. Previous researchers have suggested . . . [summary of **Introduction**]
2. The present study examines . . . [summary of **Introduction**]
3. We obtained zebrafish from . . . [summary of **Materials**]
4. We gave them . . . [summary of **Methods**]
5. . . . size was not affected . . . [summary of **Results**]
6. Restriction of food reduced . . . [summary of **Results**]
7. . . . size variability was greatest . . . [summary of **Results**]
8. These findings are consistent . . . [summary of **Discussion**] (Eaton 123)

The *New England Journal of Medicine* ensures that all Abstracts it publishes follow this organization; every Abstract includes the subheadings "Background," "Methods," "Results," and "Conclusions."

One key to writing a good Abstract is to keep it short enough that the audience can easily follow its organization. If you find yourself having trouble organizing according to the four-part plan, you may be trying to bring inappropriate materials into your Abstract.

Introduction The typical plan consists of three main parts:

1. the background (a brief review of the field),
2. an articulation of the focus and purpose of the study (a statement of the problem, hypothesis, or driving questions), and
3. a concise statement of the results.

Again, the rough structure is chronological: past studies → the present study. *And*, again, that structure oversimplifies the work of organizing the Introduction. Organizing always depends on choices of content. So, for the background part, the scientist must decide how much of the field to review, how far back to go in the history of the field, and whether to subdivide into smaller subsections (maybe a paragraph each) on different parts of the field's history. The second part presents an even harder task. The scientist must ask: Do I want to define the purpose and focus of the paper by setting up a series of questions? by stating a single problem? by establishing a hypothesis to be tested?

Not too long ago scientists were less consistent than they are now about including a brief summary of the main findings, the results. One study showed that from 1944 to 1989 the percentage of Introductions in which results were included rose from 56 to 76 percent (Berkenkotter and Huckin 35).

Many scientists give themselves guidelines for organizing the Introduction by first writing the Results. Sorting through the important findings and deciding how to organize them may be a good first step because the organization of the Introduction should prepare the readers for the logical arrangement of the Results—and the Discussion. Recall the order in which scientists in Rymer's study wrote the parts of their papers:

1. the figures (graphs and tables),
2. the Materials and Methods section and the Results section,
3. the Title and Introduction,
4. the Discussion, and
5. the Abstract.

In light of what we have been discussing for the past several pages, you can see the good sense of that order. Writing the figures is the first step in *summarizing* the data and, thereby, in *focusing* on the important findings. The summarizing and focusing work continues in the process of writing the Results. All of that work helps the scientist to better understand the focus—and therefore to state the focus in a title—and to discern a logical way of thinking about the findings. That logic can then guide the Introduction and, in turn, prepare the author to interpret the whole study in the Discussion. And, of course, only after all the parts have been written can they be summarized in the Abstract.

The Results, Introduction, and Discussion depend on one another for a logic, which is expressed in an organizational plan. We will come back to this relationship when we look at a sample paper in the section on Results.

Materials and Methods The order of the subheading indicates the main order of the Materials and Methods section: First gather up the tools and equipment, the *materials,* then conduct the experiment, the *methods.* The story sequence guides the structure. More specifically, a typical sequence in a Materials and Methods section, according to the *Council of Biology Editors Style Manual,* Fourth Edition, is the following:

1. **experimental design** [begin with an overview of the plan],
2. **subjects** [the plants, animals, or humans involved in a study],
3. **materials** [apparatus, machines, substances, etc., with especially detailed descriptions of apparatus built by the authors],
4. **procedures** [what the authors and their apparatus did], and
5. **methods for observing and interpreting data** [how data was collected, calculated, and interpreted; methods of statistical analyses]. (10)

It may be wise to write the Results section before Materials and Methods; when you find a sensible order for reporting findings from different parts of a study, you will want to present the Materials and Methods for each of those parts in the same order as they are discussed in Results. In other words, if your paper reports on a study that involves, say, three different experiments, you will not necessarily organize them according to the sequence in which you conducted them, but according to the sequence in which you report the findings gotten from them.

You will also probably want to employ the above-outlined five-part sequence for each of the three experiments, rather than listing the subjects for all three experiments, then the materials for all three experiments, and so on. Consider the following example from the Materials and Methods section of an article in a recent edition of the *New England Journal of Medicine.* The article is about the effects of air pollution on mortality rates. The Materials and Methods section is divided into three subsections: "Study Population," "Air-Pollution Data," and "Statistical Analysis." "Air-Pollution Data" is a one-paragraph subsection, which, except for the fact that it does not repeat information about the *subjects,* follows the five-part plan listed above. It contains four sentences.

Sentence one:

> As part of the original study design . . . [**experimental design**].

Sentence two:

> Size-selective aerosol samplers [**materials**] were placed . . . [**methods**].

Sentence three:

> . . . sampling was conducted . . . [**methods**].

Sentence four:

> Mean pollution levels . . . were calculated [**methods of calculating data**]. (Dockery et al. 1754)

The other subsections in Materials and Methods similarly follow the five-part organization.

Results Earlier, in the section on organizing the Introduction, we talked about the relationship between the organizational plans of each of the main sections of a scientific paper. I suggested that the logic discovered in writing the results can carry over into both the Introduction and the Discussion. The following example demonstrates the point. Two scientists conducted an experiment on the response of trout to taste stimuli (they call it "gustatory response"). Using live rainbow trout, they exposed the nerve that carries taste sensation to the brain, connected that nerve to an electronic measuring device, and measured taste responses while bathing the trout tongue with various substances. They wanted to see if there is something special in natural water (as opposed to distilled or "artificial" natural water) that allows for maximal taste response. Here, with some simplifications to clarify the plan, is the organization of the Results section:

1. How the nerve responded to the taste stimulant [serves as a baseline for other measurements]
2. Effects of distilled water, artificial natural water, and diluted natural water on taste responses
3. Effects of adding to distilled and artificial natural water a group of substances known to affect taste response
4. Effects of adding other substances known to affect taste response (Kitada and Hara 177–81)

The data, incidentally, show that in distilled water and artificial fresh water the taste response is significantly less than it is in natural water.

I do not know if the Results were written before or after the Introduction, but the two sections do follow a similar logic. This is how the Introduction is organized:

1. Background: We know that water quality affects taste response.
2. Background: We know of certain substances in water that affect taste response.
3. Hypothesis: We suspect that additional, as yet unknown substances in natural water affect taste response.
4. Experiment: To test the hypothesis, we examined the effects of . . .
5. Conclusion: The hypothesis is correct. (173–74)

The point of all this is not to dictate the order in which sections should be written, but merely to show that the logic of a scientific study should guide the organization of all its parts.

Discussion Let me continue with the point made in the preceding sentence. The Discussion of the taste-response experiment again shows the paper's basic logic. The Discussion is divided into three subsections. In the first the authors recapitulate and interpret their findings in the context of their hypothesis and conclusion. Read the following summary of the first subsection of the Discussion.

1. Distilled and artificially natural water do not allow as great a degree of taste response as does natural water.
2. Even when substances are added to distilled and artificial natural water, the level of response seen in natural water is not achieved.

3. "It is likely" [so begins the last sentence of the subsection] that substances in natural water are responsible for maximal taste response. (Kitada and Hara 182–83)

In the third subsection the authors expand on their conclusions. They write,

> This is consistent with our interpretation that the unknown substance(s) essential for maximal gustatory response in rainbow trout is not a simple physicochemical factor. . . . (184)

The complexity of the "unknown" makes the mystery more interesting for scientists, encouraging future studies. The second subsection of the Discussion adds a part not addressed elsewhere in the paper; its primary purpose is to discuss reasons that the authors' findings are different from those of similar studies conducted on other species of fish.

Generally speaking, the Discussion of a scientific paper will observe the following order:

1. Interpret the findings, focusing on how they answer the questions, solve the problem, or confirm the hypothesis presented in the introduction
2. Explain how the findings relate to previous work—whether the findings confirm or question earlier studies
3. Explain possible reasons for other surprising or puzzling results
4. State the conclusions
5. Suggest the implications for further study

One recent book on disciplinary communication observes that the Discussion essentially reverses the order of the Introduction. The authors argue that Introductions include three parts:

1. Establishing a territory [a field of study]
2. Establishing a niche [a particular area within that field]
3. Occupying the niche [the new information about the particular area]

Discussions include these three "rhetorical moves":

1. Occupying the niche
2. (Re)establishing a niche
3. Establishing additional territory (Berkenkotter and Huckin 41–42)

This may be a helpful way to conceive of how to organize your Discussions.

Finally, remember that even if rules are not made to be broken, they inevitably will be at least bent. If you understand the traditions, you will be more likely to understand when and why to bend—which is to say, adapt—them.

Exercise 8.10 Organizing the Results Section of a Scientific Paper

Of all the sections of a scientific paper, the Results may pose the most problems for novice scientists because it does not follow the Materials and Methods' chronological order, or the Discussion's logical order, or the Introduction's combination of logical and chronological order. It is therefore based on a model that must be learned and practiced.

It would be very difficult for you to try to organize someone else's Results section if you did not know all about the focus and purpose of the research being reported. Therefore, let me suggest this. Talk with a science teacher about a paper that he or she is writing or has recently drafted. Ask the teacher to explain the principle used for organizing the Results of that paper, and write up a brief report of what you learn.

Coherence

Remember first that coherence is most strongly affected by focus and structure. A scientific paper summarizes all the main parts and establishes the focus in the Abstract; it contextualizes the focus in the Introduction; and it uses the central logic of the whole paper to organize Materials and Methods, Results, and Discussion. Consequently the traditional IMRAD structure makes it fairly easy for a writer to achieve coherence—if, that is, the writer constructs all the parts according to plan. Tangents that blur the focus (e.g., unnecessary details in Materials and Methods or Results, or unfounded speculation in Discussion) will, naturally, disrupt coherence.

Another problem that novice science writers often experience comes from doing too much to establish coherence. You have no doubt been taught to construct clear and explicit transitions between major sections of a paper. In a scientific paper, however, you should *avoid* transitions as you begin each of the five main parts. You should not, for example, start the Results section with a sentence like

> After having completed all experimental procedures and collected and computed data, we summarized the significant findings.

Because the IMRAD organizational tradition is so well understood among scientists, transitions explaining the relationships between each of the five sections are unnecessary.

You should employ transitions between paragraphs in the Introduction—in order to show the history that both leads to the present study and makes it important. In the Materials and Methods and Results sections, however, such transitions are often missing; separate sets of information (for example, about procedures or tables of data) can be presented separately. In fact, it may be wise to avoid transitions between paragraphs in these sections in order to avoid implied interpretations (a transition shows a relationship, which may imply an interpretive comment about the results) that should be left for the Discussion. The Discussion brings all the information together in a logically connected set of ideas, and transitions in the Discussion are needed to connect paragraphs as they do in interpretive essays in the humanities.

Exercise 8.11 Using Transitions Appropriately in a Scientific Paper

Because transitions are not necessary *between* the major sections of a scientific paper, writers may forget that they are important *within* sections. Study the transitions (or lack thereof) in the Abstract of the student poster project printed below. Refer to the sentences by number and explain which transitions are and are not effective. Rewrite transitions that you think are poor, and add transitions in those places where you think they are needed.

> ABSTRACT
>
> **[1]** Extensive clinical studies have shown methylphenidate HCL (Ritalin) to be an effective drug in treating ADD and ADHD patients. **[2]** Little is known about the exact physiological effects of this drug. **[3]** The purpose of this investigation is to document, through the use of the smooth muscle located in isolated rat aortas, some of the physiological effects of this drug. **[4]** I therefore turn your attention to the fact that grams tension generated in response to various chemicals were measured via a Grass Ft.03 force transducer and Grass polygraph. **[5]** Older rats were found to vasoconstrict greater than younger rats in response to methylphenidate, and had a greater sensitivity to the drug as well. **[6]** We found that endothelin was not a contributing factor or mechanism towards the action of methylphenidate. **[7]** In making these observations, we hope to further the understanding of the physiological behavior of this drug as well as the illnesses it treats.

Exercise 8.12 Organization in the Natural Sciences

In your library or from any other sources you can locate, find examples of organizational formats in science writing. Look for examples of the traditions discussed in the preceding section, modifications of those traditions, and nontraditional organizational plans. Analyze the reasons for and the effectiveness of the organizational plans of three different pieces of professional science writing.

WORKSHOP 11

Organization and Coherence in the Natural Sciences

In this workshop you will consider Clarence's questions and choices about organization and coherence. If you want to review the assignment for Clarence's paper, it can be found in Chapter 2, page 43. You will also need to refer to the complete text of Clarence's paper in Chapter 2 in order to complete this workshop.

CLARENCE'S QUESTIONS ABOUT ORGANIZATION AND COHERENCE

Clarence's questions show the same kind of concerns that we talked about earlier in this section on the natural sciences. Although the major organizational decisions are given by the IMRAD format, decisions about what information to place in what section can be very tricky. Like the students whose papers we are using for the other three workshops in this chapter, Clarence asks no questions about the organization or coherence within each section of his paper. Later in this workshop, you will consider the organization of his Results section. Here are Clarence's questions:

- Include the "reason" for varied means of final temperatures for refrigerated group in the Results or not?
- Does the incubator group just go further to the hot end, or do they express greater tolerance? Is this an issue for the Discussion?
- Where should I explain changes in methods that I made after seeing my first results? Would the early results go in the Methods section as part of the explanation for the changes in methodology?

CLARENCE'S OUTLINE

The following outline uses the headings of the main sections and the first sentence (almost always the topic sentence) of each paragraph in each section.

ABSTRACT

¶1 The present study investigates the pressures for temperature habitat selection defined by culture temperature as a function of time.

¶2 Since the animals within the arena would venture as far as physically possible to the cold end but not toward the hot end of the gradient, an upper temperature limit was recorded for each group.

INTRODUCTION

¶3 Thermal acclimation is the process by which any given organism adjusts to the current applicable temperature conditions.

¶4 Literature has been published emphasizing how an organism's ability to survive extreme temperatures is directly related to the environment of the organism.

¶5 Whittow (1973) describes how thermoregulatory behavior usually involves movement.

METHODS AND MATERIALS

¶6 The pillbugs (*Armadillidium vulgare*), purchased from the Carolina Biological Supply Company and used in the present study, were cultured in circular finger bowls (diameter 10 cm, depth 4 cm) lined with sand kept moist with the regular addition of tap water.

¶7 Every third day the animals from one culture of each temperature were placed in the center (equidistant from both sides and ends) of the open field arena described in Figure 1.

RESULTS

¶8 Observations during the course of the present study revealed that each temperature culture group behaved in a characteristic fashion when placed within the temperature gradient.

¶9 Animals cultured at room temperature tended to scatter somewhat throughout the arena and respective temperature gradient.

¶10 The cultures tested from the refrigerator behaved very differently, each individual hardly ever coming to rest in any one spot for a lengthy period of time.

¶11 Analysis of variance of the final location temperature means of the three culture groups was done using the Kruskal-Wallis test.

¶12 Further analysis of the mean final location temperatures within each culture set compared from day 4 to day 19 showed no significant difference for the means of two of the groups.

¶13 During each test of the study it was observed that each group of bugs would go a specific and characteristic distance from the hot end of the arena before very abruptly turning in the opposite direction.

DISCUSSION

¶14 The data recorded in the study seem to suggest several specific things.

¶15 This graph also illustrates the mean final location temperatures as an inversion of the culture temperatures for the groups from the incubator and the refrigerator.

¶16 The fact that the Kruskal-Wallis test indicated no significant difference in the final location mean temperatures of day 19 emphasizes some of the variation seen within the data.

¶17 When the final location mean temperature of day 4 is compared to that of day 19 within the same culture set of groups, it becomes clear that acclimation must have some definitive effect over time.

¶18 The slight increasing tendency of incubator groups to be able to withstand hotter temperatures indicated in Figure 3 directly correlates with previous acclimation work done in other species (Edney 1964).

REFERENCES

ANALYSIS AND REVISION OF THE LARGE-SCALE ORGANIZATION

What, if any, changes would you suggest in the large-scale organization of the report? In order to answer these questions, you will need to look at the content of each of the parts (in Chapter 2) and not at just the outline above.

ANALYSIS AND REVISION OF ORGANIZATION WITHIN SECTIONS

As we noted in our discussion of the major parts of an IMRAD paper, the Results is often the most difficult part for a natural scientist to organize. Explain why you think Clarence organized his Results as he did, and suggest any revision that you think would better accomplish the purpose of the section. You may comment on both the arrangement of the paragraphs and the arrangement of the sentences within paragraphs.

RESULTS

Observations during the course of the present study revealed that each temperature culture group behaved in a characteristic fashion when placed within the temperature gradient. Animals cultured at the warmest temperature (incubator) tended to move toward the colder end of the gradient. Later stages of the study revealed that this group concentrated more and more at colder temperatures, as illustrated by Figure 2. 8

[Figure 2]

Animals cultured at room temperature tended to scatter somewhat throughout the arena and respective temperature gradient. This resulted in greater mean final location temperatures (Figure 2) than the incubator groups. Over the duration of the study both the incubator and the room temperature groups illustrated a correlation of the means of the final temperatures of location both having linear regression values of $r = 0.10$ for the refrigerator cultures as seen in Table 1. 9

[Table 1]

The cultures tested from the refrigerator behaved very differently, each individual hardly ever coming to rest in any one spot for a lengthy period of time. Rather, these animals would continually intersperse resting with moving, so that when final location temperatures were measured at 30 minutes all of these animals were in quite different locales each time. This results in the widely varied and oscillating pattern of final temperature means seen in Figure 2, for this set of test groups. 10

Analysis of variance of the final location temperature means of the three culture groups was done using the Kruskal-Wallis test. This analysis was done for the data collected early in the study, at day 4, and again for data from day 19, near the termination of the study. This test for day 4 showed there to be a significant difference between the three means, $p = 0.008$. On the other hand, day 19 showed no significance in the differences between the means, $p = 0.26$. 11

Further analysis of the mean final location temperatures within each culture set compared from day 4 to day 19 showed no significant difference for the means of two of the groups. Two-sample T tests on both the refrigerator and room temperature data produced p values of 0.10 and 0.14 respectively. The same test on the incubator group produced a value of $p < 0.001$, showing a high degree of significance in the difference of means from initiation to termination of the study. 12

During each test of the study it was observed that each group of bugs would go a specific and characteristic distance from the hot end of the arena before very abruptly turning in the opposite direction. Graphical analysis of this observed difference for each group shows that the incubator set illustrates a slight trend of increasing tolerance to hotter temperatures. The room temperature group also shows a tendency toward tolerating an increasingly warmer temperature with much less variation. The refrigerator group shows a somewhat erratic pattern of temperature limits as shown in Figure 3. 13

[Figure 3]

During the day 19 test of the incubator group, one of the animals seemed to have crossed this "barrier" line of tolerance. It immediately began very jerky spastic movements, and within 10 seconds had flipped over onto its back, and ceased all movement within the subsequent 10 seconds.

ANALYSIS AND REVISION OF COHERENCE

Explain the techniques that Clarence's paper uses to create coherence. Give examples of two or three techniques that lend coherence to the overall structure and of two or three techniques that improve coherence within sections, subsections, or paragraphs.

Questions for You

Having thought about organization and coherence in Clarence's paper, what questions would you ask about organization and coherence if you were revising the whole paper? Do you have any remaining general or specific questions about the principles of organization and coherence in the natural sciences? If you do, write them out for your teacher to see.

SOCIAL SCIENCES

Research articles in the social sciences are usually organized like articles in the natural sciences, using an IMRAD structure: Abstract, Introduction, Methods, Results, and Discussion. But there is much more variety of organizational plans than in the natural sciences. And that variety is not merely because there are so many different disciplines within the social sciences. True, articles in anthropology will usually follow structures more like those in the humanities than do the traditionally scientific articles in psychology, but a great range of organizational forms can exist even within individual disciplines. In political science, for example, some of the professional journals carry articles that rely on quantitative approaches, applying a scientific method and appearing in the traditional IMRAD format. Other political science journals prefer essays that look more like those in English or philosophy. Still other journals in political science will publish, within the same issue, articles organized in formats very different from one another.

Since we cannot cover all the organizational models for writing in the social sciences, we will focus on a manageable set. After taking a quick look at a handful of examples of large-scale organization in different social science disciplines, we will look at the differences between the way natural and social scientists use the IMRAD plan. After that we will consider examples of another set of formally organized papers in the social sciences—case studies. For our discussion of organization in subsections and paragraphs, a few models will demonstrate a range of options. Finally we will consider the ways in which coherence in social science writing is affected by techniques commonly used by people in both the natural sciences and the humanities.

Large-Scale Organization

A Sampling of Organizational Models The following group of outlines will help you begin to realize how many options are available to you in the social sciences. As we said at the beginning of the social sciences section in Chapter 2, the range of possibilities should be encouraging—it offers you considerable freedom of choice. But that range should also be an encouragement to study carefully the traditions in your specific field; a broad range of choice should not be seen as an excuse for ignoring traditions. Finally, heed this warning: If your audience knows that you have the freedom to choose among many options, they will be more likely to hold you responsible for your choices.

The following presents the headings and subheadings (looking as they do in their printed format) from several recently published journal articles in the social sciences. I also parenthetically indicate the length of each article, in number of paragraphs, and the number of figures and tables in each section and subsection. When an identifiable section is not labeled (for instance, if several paragraphs are clearly set off as an introduction but the heading "Introduction" does not appear), I place it in parentheses and mark it "unlabeled." I have also numbered the samples for later reference.

The first sample's title makes it sound as if it could come from a journal of anthropology, but it appears in a psychology journal and basically follows an IMRAD plan.

1. *Journal of Cross-Cultural Psychology* (June, 1993). "Moral Reasoning Among Tibetan Monks." Ann M. Heubner and Andrew C. Garrod.
    - (Abstract, unlabeled, one paragraph)
    - (Introduction, unlabeled, eleven paragraphs, one table)
    - **METHOD**
      Setting (eight paragraphs)
      Subjects (three paragraphs)
      Procedure (four paragraphs)
      Scoring (three paragraphs)
    - **RESULTS**
      (Introduction, unlabeled, one paragraph)
      Moral Reasoning (four paragraphs, one table)
      Moral Orientation (seven paragraphs, one table)
      Buddhist Moral Concepts (ten paragraphs)
    - **CONCLUSION** (two paragraphs)

Next are several different structures from articles in political science. The first is interesting in that it begins and ends with sections that are like the standard IMRAD format, but the three middle parts seem to be based on the author's innovative plan. On the other hand, since the hypotheses are not presented until the fifth part, the second through fifth parts could all be seen as Introduction, in which case the essay as a whole could be said to follow the traditional IMRAD format.

2. *American Journal of Political Science* (February, 1994). "Federal Reserve Policy Decision Making: Political and Bureaucratic Influences." George A. Krause.
   - (Abstract, unlabeled, one paragraph)
   - (Introduction, unlabeled, three paragraphs)
   - **The Case of the Federal Reserve System** (two paragraphs)
   - **Past Research on Federal Reserve Policy Making and FOMC Decision Making** (one paragraph)
   - **A Multilayered Framework for Analyzing Multiagent Bureaucracies**
     (Introduction, unlabeled, four paragraphs)
     External Influence Exerted by the Executive Branch (three paragraphs, two indented "Hypotheses" within paragraphs)
     Internal Influence Exerted by the Commission Chair (three paragraphs, one indented "Hypothesis" within a paragraph)
   - **Measurement and Methodology** (five paragraphs)
   - **Findings**
     (Introduction, unlabeled, one paragraph, one table)
     Individual Presidential Administrations, Fed Chairs, and Consensus Building (three paragraphs, one table)
     Partisan Presidential Administrations, Fed Chairs, and Consensus Building (three paragraphs, one table)
   - **Conclusion** (three paragraphs)

Another article from the same journal uses the traditional IMRAD parts but rearranges and relabels them.

3. *American Journal of Political Science* (February, 1994). "Counteractive Lobbying." David Austen-Smith and John R. Wright.
   - (Abstract, unlabeled, one paragraph)
   - **Introduction** (ten paragraphs)
   - **Theory and Hypotheses** (thirteen paragraphs, one figure, three labeled "Hypotheses")
   - **Empirical Model, Data, and Results** (seventeen paragraphs, three tables)
   - **Conclusions** (four paragraphs)

Here is another political science article; it uses topics and questions to provide the structure and bears little resemblance to an IMRAD plan.

4. *American Political Science Review* (June, 1994). "Economic Security and Value Change." Ronald Inglehart and Paul R. Abramson.
    - (Abstract, unlabeled, one paragraph)
    - (Introduction, unlabeled, five paragraphs)
    - **Short-Term and Long-Term Value Change** (five paragraphs)
    - **Long-Term Value Change** (eight paragraphs, one figure, one table)
    - **What Causes Long-Term Value Change?** (three paragraphs, one figure)
    - **What Causes the Period Effects?** (twenty-three paragraphs, four figures, four tables)
    - **Conclusion** (ten paragraphs)

Though this does not look like an IMRAD plan, it does contain the basic IMRAD parts. In the section titled "Short-Term and Long-Term Value Change" the authors present their methods; then in "Long-Term Value Change" we see results; and in the two "What Causes?" sections the authors interpret the results as scientists do in a Discussion. My assessment oversimplifies the paper somewhat; new results do get introduced in both of the "What Causes?" sections. But the overall structure does contain all the IMRAD parts and runs roughly parallel to the IMRAD organization.

Still another political science article uses only numbers to indicate the major divisions, without indicating the content or purpose of the parts.

5. *The Review of Politics* (Winter, 1994). "Religious Parents, Secular Schools: A Liberal Defense of an Illiberal Education." Shelley Burtt.
    - (Abstract, unlabeled, one paragraph)
    - (Introduction, unlabeled, ten paragraphs)
    - **I** (eight paragraphs)
    - **II** (five paragraphs)
    - **III** (fourteen paragraphs)
    - **IV** (six paragraphs)

This article does not contain any tables or figures and does not follow an IMRAD plan even beneath the surface. It interprets individual cases—in much the same way that a literary critic might interpret books—in order to construct a logical argument.

A paper in a sociology journal uses the IMRAD plan, with slight modifications.

6. *American Journal of Sociology* (July, 1992). "Gender, Parenthood, and Job-Family Compatibility." Jennifer Glass and Valerie Camarigg.

- (Abstract, unlabeled, one paragraph)
- (Introduction, unlabeled, two paragraphs)
- **Background** (eight paragraphs)
- **Data and Methods**
    - (Introduction, unlabeled, two paragraphs)
    - *Variable Construction* (eight paragraphs, two tables)
- **Results**
    - *Construction and Validation of the Job Compatibility Measure* (seven paragraphs, one table)
    - *Analysis of Compensating Amenities* (six paragraphs, four tables)
- **Discussion** (three paragraphs)

A paper in the *American Sociological Review*, the "flagship journal" of the American Sociological Association, appears in the same issue as some IMRAD-based papers, but it utilizes an original organization.

7. *American Sociological Review* (February, 1994). "Changes in the Segregation of Whites from Blacks During the 1980s: Small Steps Toward a More Integrated Society." Reynolds Farley and William Frey.
    - (Abstract, unlabeled, one paragraph)
    - (Introduction, unlabeled, four paragraphs)
    - **Explanations of Segregation** (four paragraphs)
    - **The Development of the First Ghettos** (six paragraphs)
    - **The Second Ghetto: The Emergence of Segregated Suburbs** (six paragraphs)
    - **Challenging Racial Residential Segregation, 1960 to 1990**
      (Introduction, unlabeled, one paragraph)
      Changes in Federal Housing Policies (five paragraphs)
      Changes in the Racial Attitudes of Whites (seven paragraphs)
      New Housing Construction (two paragraphs)
      Growth of the Black Middle Class (four paragraphs, one figure)
    - **Racial Segregation in the 1980s**
      (Introduction, unlabeled, six paragraphs, one figure, one table)
      Age of Metropolitan Area (three paragraphs, one figure)
      Functional Specialization (ten paragraphs)
      Region (three paragraphs)
      New Construction (thirteen paragraphs, one table)
    - **Explaining Changes in Segregation in the 1980s** (fifteen paragraphs, the last labeled "Summary")
    - **Conclusion** (six paragraphs)

Finally, consider an anthropology article that we looked at in Chapter 2. Its complex organization does not follow any prescribed format.

8. *Journal of Anthropological Research* (1993). "Fuzziness and Phenomenology in Ethnological Research: Insights from Fuzzy Set Theory." Charles D. Laughlin.
    - (Abstract, unlabeled, one paragraph)
    - (Introduction, unlabeled, two paragraphs)
    - **Fuzzy Set Theory**
      (Introduction, unlabeled, two paragraphs)
      Fuzziness, Alpha Cuts, and Crispness (three paragraphs)
      Hedges (one paragraph)
    - **Ethnology, Cateogires, and Fuzzy Set Theory** (two paragraphs)
      (Introduction, unlabeled, two paragraphs)
      Fuzziness and the Ethnological Literature (five paragraphs)
    - **The Experiential Proximity Hypothesis**
      (Introduction, unlabeled, two paragraphs)
      Fuzziness and Causation (two paragraphs)
      The Phenomenological Basis of the Experiential Proximity Hypothesis (five paragraphs, one figure)
      Fuzziness and Ethnological Concepts (two paragraphs)
    - **Fuzziness and Transpersonal Experiences**
      (Introduction, unlabeled, one paragraph)
      Ritual Transformation and Fuzziness (eleven paragraphs)
    - **Theravadin Buddhist Categories of Consciousness**
      (Introduction, unlabeled, one paragraph)
      Naming and Forming (one paragraph)
      The Five Aggregates (six paragraphs)
      The Abhidharma (eight paragraphs)
      Fuzziness and Totality in Buddhist Phenomenology (four paragraphs)
    - **Conclusions** (five paragraphs)

One interesting feature emerged as I was studying these examples. There does not seem to be a correlation between the amount of data in a paper and adherence to an IMRAD plan. Examples four and seven include many tables and figures but follow nontraditional organizations. In other words, we cannot say that the articles with more "hard" facts are more likely to use an IMRAD plan.

We will note other features of the examples' structures in the next section. It is enough to say here that the great variety of the samples renders us unable to draw any concrete conclusions about organization in social science writing. But it is helpful to note that the scientific method and scientific ways of thinking about and trying to solve problems heavily influence the problem-solving approaches—and thus the organizational strategies—in the social sciences. In most of the preceding examples, we see some core components from the IMRAD plan.

It seems that social scientists often begin by conceiving the structure of a paper in an IMRAD format; they then vary that format to fit their special needs or the requirements of an individual journal. Of course, the "Fuzzy" article from anthropology (example eight) forces us to question that generality, and we must conclude with the caution we keep coming back to in the social sciences: Be prepared for anything.

Differences between the IMRAD Model in the Natural Sciences and in the Social Sciences Even when social scientists use the IMRAD plan, they adjust it to their particular needs. Let's consider some differences between the IMRAD parts in the natural and social sciences.

Keep in mind the fact that the IMRAD parts are often rearranged and recombined in the social sciences. For example, the Results and Discussion may be joined in one section and then a Conclusion added that does the summarizing work of the Discussion in the natural sciences. The recombinations make direct comparisons between natural and social sciences difficult, but we should be able to discern some important distinctions.

Abstract The purpose remains the same—to summarize the article. Therefore, if the Abstract is to reflect the ways in which the content of the IMRAD sections in social science writing differs from that in the natural sciences, so the Abstract is more likely to include formally stated hypotheses and comments on statistical methods. But the organization of the Abstract will still reflect the IMRAD plan.

Introduction The *Publication Manual of the American Psychological Association,* which is the most commonly used style guide throughout the social sciences, directs writers to "introduce the problem," "develop the background," and "state the purpose and rationale" in the Introduction. None of that sounds very different from introductions in the natural sciences, but when we look into the way that that advice is interpreted in practice, some obvious differences appear. First, introductory sections are often quite long in social science writing. Looking at example two from above and defining "introductory materials" as all that precedes the Methods, we see that about half of the total number of paragraphs in the paper are introductory (in the natural science examples we looked at, introductions run from 10 to 25 percent of the number of paragraphs).

That large proportion of space given to an Introduction is common in the social sciences because so much must be accomplished in introducing a study. You may remember from Chapter 2 that social scientists do not base their research on previously established facts as much as do natural scientists. Consequently, they must convince their audience of the value and validity of their topics. Much of that convincing happens in the introductory sections. I use the plural, *sections*, because Introductions in the social sciences are often divided into subsections on, for example, problems being studied, backgrounds, models, definitions of variables, and hypotheses.

The use of formally introduced and stated hypotheses is another feature of writing in the social sciences that we rarely see in the natural sciences. Not only do social science writers often use a heading to set off a subsection on "Hypotheses," but they label each hypothesis within the subsection and offset it from the rest of the text. This makes the hypotheses easy to find when writers, or readers, want to evaluate them in light of the findings.

Finally, linguists John S. Swales and Hazem N. Najjar conducted a study of Introductions in the natural and social sciences; they conclude that physicists are far more likely to announce their main findings in their Introductions than are psychologists. Physicists in the study included the important results about half the time, whereas the psychologists did so less than 10 percent of the time. The authors of the study propose that the psychologists may have thought it "rhetorically unwise" to give readers results early. The implication is that results which are more likely to be debated are best held until after their proof is mustered.

Methods The fact that most social scientists use the heading "Methods" rather than "Materials and Methods" does not seem to mean too much; they include both types of information in the section. But they also emphasize statistical methods and analyses more than natural scientists do. Carolyn J. Mullins, in *A Guide to Writing and Publishing in the Social and Behavioral Sciences*, says that social scientists reporting on experiments (for example, an experiment to test the influence of sleep deprivation on eating, in either animal or human subjects) use an outline for the Methods section that is like the outline used in natural sciences: (1) subjects, (2) setting and apparatus, (3) experimental procedures, and (4) data collection and analysis procedures.

Recall example three from above, which investigates counteractive lobbying—the lobbying of politicians who are expected to vote against a lobbyist's interests. The statistical information is highly complicated and hard to assess, so the authors must emphasize the validity of their statistical methods by carefully describing those methods. Another article that we looked at earlier, "Gender, Parenthood, and Job-Family Compatibility" (example six), spends a large proportion of time explaining the authors' statistical methods. It describes the methods used to "assess the validity" of variables and includes a table on the "Construction and Reliability of the Job Description Scales." Emphasis on proving validity and reliability of statistical methods becomes necessary to ease readers' suspicions of biases that can corrupt data.

Results Social scientists organize findings as do natural scientists, using a structure that reiterates the logic established in the Introduction and that anticipates the logic of the Discussion. Of course, if Results are combined with either Methods or Discussion, the organization will be modified. Sometimes authors will organize around hypotheses, presenting the Methods, Results, and Discussion for each hypothesis. Results sections may also include additional discussion of the statistical validity of the findings.

Discussion In the natural sciences, you may test the hypothesis that a certain hormone is likely to rise in response to another hormone. You set up an experimental test, and, if your results confirm your hypothesis, you use the Discussion to explain the significance and suggest further research. In the social sciences, hypotheses tend to be so much more complex that extra demands are put on the Discussion and Conclusion. The *Publication Manual of the American Psychological Association*, Fourth Edition, says that the Discussion should open with a "clear statement of the support or nonsupport for your original hypothesis." It also says that writers should "evaluate" results "with respect to [their] original hypothesis" (18).

Further, writers should discuss "theoretical consequences" and the "validity of . . . conclusions." When we see words like *evaluate* and *validity*, we see different emphases than in the natural sciences. The Discussion must indicate how and why the results are valid. It is not enough to say, "This is what our findings mean, and this is the new research that should be done." Writers must convince the audience that the results are legitimate. Just as the Introduction is likely to contain a formal statement of the hypotheses, the Discussion is obliged to provide explicit discussion of whether or not the hypotheses were justified by the study. This seems part of the social sciences' greater tendency to question one another's work and results; each paper exists more independently of others in the field than is the case in the natural sciences.

Large-Scale Organization of Case Studies In addition to research reports, social scientists often write case studies, and this traditional piece of writing has evolved some organizational traditions. Of course there are many different kinds of case studies: reports that a social worker writes on a family, reports a school psychologist writes on individual children, reports that an economist writes on a particular business or market. And each government agency or private psychological practice may have its own standard forms for the case studies it writes. However, certain features of organization govern most case studies.

You may remember Ann, the graduate student in psychology whose work we looked at in Chapter 5. She was given a sample case-study report form (for a "Consultative Assessment Report") by one of her professors. Here is how it is organized:

I. Demographic Data (basic information—the subject's name, address, parents, birth date, etc.)
II. Background Information and Referral Questions (referral questions are given by the person who has referred the subject to the psychologist; they indicate the information that the psychologist is being asked to provide; there are three such questions in the sample)
III. Answers to Referral Questions
  Question #1
    Assessment Procedures
    Results of Assessment Procedures
  Question #2
    Assessment Procedures
    Results of Assessment Procedures
  Question #3
    Assessment Procedures
    Results of Assessment Procedures
IV. Recommendations

You may notice that the parts of an IMRAD correlate with this case-study format. Parts I and II parallel the Introduction. Each of the three "Question" subsections contains one subsection on Methods and one on Results. And the Recommendations carry out the same basic function as the Discussion—summarizing, interpreting, and suggesting what to do in the future.

In both a "Personality Appraisal" that Ann wrote and in a case-study report printed in a textbook for a neuropsychology class, we see these same basic parts. This is the structure of Ann's "Personality Appraisal"; the corresponding IMRAD parts are given in parentheses.

Reason for Referral	(Introduction)
Background Information	(Introduction)
Assessment Procedures	(Methods)
Assessment Results	(Results)
Summary and Conclusion	(Discussion)
Recommendations	(Discussion)

And the neuropsychology report:

(Introduction, unlabeled)	(Introduction)
Report of Neuropsychological Examination	

Current Complaints and Pertinent History	(Introduction)
General Attitude of the Patient	(Introduction)
Psychological Tests Administered	(Methods)
Neuropsychological Test Results	
Psychological Implications	(Results)
Neurological Implications	(Results)
Summary and Recommendations	(Discussion)

I am oversimplifying these sample case studies by showing how they parallel IMRAD-plan papers in their organization. We could generalize even further and show that all papers in all disciplines share a movement from problems to resolutions and suggestions. But it is also true that all standardized organizational patterns will be modified into slightly different forms in response to a particular purpose and audience. My point here is simply that despite the great organizational variety we see in the social sciences, the scientific method and the traditional pattern for expressing that method remain a strong influence.

Exercise 8.13 Organizing Information in the Appropriate Sections of a Social Sciences Paper

The following sentences come from an article in the *American Journal of Sociology;* it is the article from which example six, in the earlier section titled "Large-Scale Organization," was taken. Decide in which section of the article each sentence belongs. Write down the number of the sentence and then the name of the section. Here are the headings of the sections:

Abstract
Introduction
Background
Data and Methods
Results
Discussion

Here are the sentences:

1. Three variables were created to measure job dimensions from the 74 Likert format job description items asked on the QES.
2. This article explores the contention that the concentration of women in certain jobs that accommodate parenting can help explain both occupational gender segregation and the lower wages received by women employed full time.

3. Some neoclassical theorists have emphasized job accommodations to parenting other than severely reduced hours or exits from employment.
4. Future empirical work should focus specifically on why this happens, as well as on how employed mothers attempt to ameliorate this disadvantage.
5. Models estimating the effects of gender and family status on values . . . reported by respondents are shown in Table 4.
6. Initial factor analyses showed that the intercorrelations between the variables for ease, flexibility, support, and break times were low. . . .
7. The family and the workplace have frequently been characterized as "greedy institutions" (Coser 1974).
8. The analyses performed here lend little support to the assertion that female-dominated jobs are chosen by women because of their greater compatibility with current or anticipated family demands.

Organization within Sections, Subsections, and Paragraphs

Organization within Sections and Subsections The eight sample outlines of headings and subheadings with which we began the section on large-scale organization have already provided some examples of how subsections get organized. And we know that when social scientists follow an IMRAD organization they generally arrange materials within the IMRAD parts as do natural scientists. They may emphasize, for example, the section on statistical analyses within the Methods section more than natural scientists, but they still place it last among the parts that make up Methods (see page 272).

So the basic point holds: Whether you adopt the organizational logic from a traditional pattern, modify that pattern, or invent your own pattern, you must make clear to your reader how the logical structure of each subsection reinforces and contributes to the logic structure of the whole paper.

A closer look at example four, "Economic Security and Value Change," should demonstrate the point. In their introductory paragraphs the authors write (I am paraphrasing the contents of all the sections of this example):

- Over two decades ago Inglehart (one of the authors of the paper) proposed a theory that economically advancing societies would see a shift in the values of their populations from "materialist" (giving priority to "economic and physical security") to "postmaterialist" (giving priority to values like freedom and "quality of life").
- Since then other social scientists have disputed the theory,
- but this study will show evidence that Inglehart was right.

The second section, titled "Short-Term and Long-Term Value Change," begins with Inglehart's two hypotheses:

1. "Scarcity hypothesis": The socioeconomic conditions surrounding individuals have a short-term effect on those individuals' values.
2. "Socialization hypothesis": The socioeconomic conditions that individuals grow up in have a long-term effect on those individuals' values.

Consequently, the second section follows the hypotheses with the following:

> People who grow up in an advancing economic society will be more likely than people of previous generations to have "postmaterialist values" (although short-term economic changes will continue to create short-term fluctuations in the rising curve of postmaterialism).

The second section then concludes by explaining the methods used to measure value change over time and in relation to economics.

Section three, "Long-Term Value Change," shows statistically convincing results which indicate that

> postmaterialist values increased between 1970 and 1992 in seven of eight West European countries and the United States.

In section four, "What Causes Long-Term Value Change?" the primary cause is said to be

> "generational replacement." As the younger people, who are more postmaterialist than their parents replace the older generations, the society becomes more postmaterialist.

Although this long-term result seems clear, say the authors, short-term effects of economic changes are important and compatible with the theory of generational replacement.

Section five, "What Causes the Period [short-term] Effects?" offers lengthy explanations of various short-term effects, the ways they modify the long-term effect, and their compatibility with the generational replacement theory.

Finally, the "Conclusion" basically says that Inglehart was right in both his theory and his method for studying value change.

We see how the whole paper flows through the logic of its structure:

1. Here's the theory and method; here is a clear long-term effect that the theory predicted.

2. Here are some short-term effects that are both compatible with the long-term effects and predicted by the theory.
3. Therefore, the theory and methods were right all along.

We also see how each individual part is organized to move the argument along. The second section may be the best example:

1. Here is the first hypothesis (paragraph one).
2. Here is the second hypothesis (paragraph one).
3. This is what Inglehart predicted based on these two hypotheses (paragraphs two and three).
4. This is how he measured his predictions (paragraphs four and five).

The organization of the subsection sets us up for the results of the tests and the proof of the theory that will follow.

Exercise 8.14 Organizing a Case Study

The following sentences are taken from a case study, called a personality appraisal, written for a graduate class in psychology. On a separate sheet of paper, write down the number of each sentence and then indicate which section (using the headings given) each sentence should be placed in. If more than one sentence goes in one section, please indicate the *order* in which they should appear within the section. Give a brief reason for placing each sentence as you do.

Here are the headings:

I. Background Information
II. Reason for Referral
III. Evaluation Procedure
IV. Behavioral Observation
V. Assessment Results
VI. Recommendations

The sentences:

1. Linda's expressed disinterest in some academic areas should be addressed so that she may be offered new means of finding enjoyment in academics.
2. On subtests such as Bead Memory, Matrices, and Pattern Analysis, which focus on memory, sequencing, and visual-motor tasks, Linda appeared to be invested, using quiet rehearsal and memory strategies with her mouth and fingers.
3. Linda currently lives with her father, mother, and younger sister, Ali, in Bloomington, MI.

4. Twelve subtests were administered to Linda with two five-minute breaks between subtests.
5. Although Linda performed at average or above average on all subtests, she performed significantly better on subtests grouped in the nonverbal reasoning/visualization and memory factors than she did on subtests grouped in the verbal comprehension factor.
6. She reports her favorite subject to be social studies because she likes to learn about all different countries and their people.
7. Dressed in a pink sweatshirt with rows of lace and frills, Linda's fingers were adorned with elaborate rings, but she took more interest in a plastic "mood" necklace, which she was eager to demonstrate.

Organization within Paragraphs Social science writers follow no unique principles for organizing paragraphs. They find a logic for a paragraph that conforms to the logic of the subsection and the whole paper. Having nothing new to study on this score, let's save time and move on to discuss coherence.

Coherence

Social scientists use transitions between the paragraphs of a subsection and between the sentences of a paragraph—as most writers do. Their readers require standard transitional terms and clear organizational patterns within paragraphs to follow the flow of the writing. When it comes to transitions between sections and subsections, however, the situation becomes more complex.

You will recall that natural scientists using an IMRAD plan do not use transitions between the major sections. The same is true for writing in the social sciences. The general principle is this: When your organizational structure is clear to the reader because it follows a familiar tradition (which is clearly announced by headings and subheadings), transitions between sections are unnecessary. When, however, you use unfamiliar patterns, you must use explicit transitions between sections to clarify the relationship between the sections and the overall argument.

So, in example one—the IMRAD-based essay on "Moral Reasoning" from the *Journal of Cross-Cultural Psychology*—the author uses no transitions between sections. The case studies we looked at earlier also use a standard format that their readers recognize, so they utilize no transitions between sections.

On the other hand, example five, the political science article that uses only roman numerals to mark its main sections, must take the time to show how sections are related. Consequently, at the end of section "I" the author announces, "Let me turn . . . from judicial to academic discourse," academic discourse being the content and purpose of section "II." The nontraditional headings of example four, the paper on economics and value change, also make transitions necessary. The introduction ends with:

> . . . he first advanced his theory of value change over two decades ago.

And the following section begins,

> Inglehart advances two hypotheses that predict changing values.

Both particular words and main ideas are repeated at the beginning of the new section in order to clarify the transition.

In example three, "Counteractive Lobbying," in which the parts are clearly based on the IMRAD plan, the organization is sufficiently nonstandard that the authors felt obliged to end the introduction by announcing the purpose and content of each of the paper's main sections. In the second section the authors present their hypotheses; then the third section begins,

> We test the hypotheses above. . . .

In short, if a familiar traditional structure makes your organizational plan clear, you should skip transitions between sections. If you are unsure about your readers' knowledge of your plan, give them the guidance of clear transitions.

Exercise 8.15 Using Transitions Appropriately in the Social Sciences

Go to your library and find several journals in the various social sciences (you might try anthropology, sociology, and political science; or your teacher may suggest other disciplines or even particular journals). First look for articles that do and do not follow the traditional IMRAD organizational model. Then look for the absence or presence of transitions between sections. Write down at least five examples of transitions in articles that do not use an IMRAD model. Explain why your examples are effective and necessary transitions. Your teacher may want to specify how many articles you look at; I recommend two or three that do follow an IMRAD plan and two or three that do not, from each of three different disciplines.

Exercise 8.16 Organization in the Social Sciences

In your library or from any other sources you can locate, find examples of organizational formats in social science writing. Look for examples of the traditions discussed in the preceding section, modifications of those traditions, and nontraditional organizational plans. Analyze the reasons for and the effectiveness of the organizational plans of three different pieces of professional social science writing.

WORKSHOP 12

Organization and Coherence in the Social Sciences

In this workshop you will consider Marji's questions and choices about organization and coherence. If you want to review the assignment for Marji's paper, it can be found in Chapter 2, page 64. You will also need to refer to the complete text of Marji's paper in Chapter 2 in order to complete this workshop.

MARJI'S QUESTIONS ABOUT ORGANIZATION AND COHERENCE

As we have seen in the earlier workshops on Marji's paper, many of her questions grew out of the change in the assignment—the shift, as she describes it, from an objective to a subjective study. Marji asks questions such as the ones Clarence asked about his biology paper, questions about what section in which to put information. She also wants to know whether or not factual information can be worked into her theme sections. Further, because the new assignment gave her the responsibility for creating and shaping the structure of the section titled "Three Themes of Dan's Personality," she had to ask questions about the number of parts—how many main headings and subheadings to include. Here is what she wrote in her journal:

- Crossing disciplines because of the theme-based organization made it hard to know where to put the formal-learning material.
- How do I fit facts under the "Love for People" theme?
- How many levels of headings should I have?
- Do I need to create sublevels?

MARJI'S OUTLINE

Marji's outline was formed by using only her headings and subheadings. She uses a modified IMRAD format, not unlike some of the samples we looked at in the social sciences. It seems to result from the combination of objective and subjective approaches that the assignment, and the changes it went through, created. The section titled "Three Themes of Dan's Personality" could have been called "Results" because the three themes do represent the main items that Marji learned about Dan.

Here are the headings and subheadings of Marji's paper:

Abstract
Introduction
Methods
Three Themes of Dan's Personality
    Sensitivity
        Interaction with Others
        Engages in Learning
    High Motivation
        Interactions with Others
        Engages in Learning
    Love for People
        Interactions with Others
        Engages in Learning
Conclusion

ANALYSIS AND REVISION OF THE LARGE-SCALE ORGANIZATION

Did Marji manage to adjust to the changes in the assignment and devise an organization appropriate for the second version of the assignment, or did she cling to some parts of the first version and create an awkward crossbreed?

In the first version of the assignment the teacher had asked the students to organize the paper around five descriptive headings: (1) physical presence and gestures; (2) disposition, temperament, emotional tone; (3) relationships with peers and adults; (4) activities, interests, preferences; and (5) formal learning. In the second version the teacher said to organize the paper around three themes and include information about the five descriptive headings under each of the themes. Marji did not do that; she simplified her structure and discussed only "interactions" and "learning" in each theme section. Do you think that was a good decision? Would you have decided differently and, if so, why?

What, if any, changes would you suggest in the large-scale organization of the report? Explain the reasons for the changes you suggest. What, if anything, seems especially effective about Marji's organization? In order to answer these questions, you will need to look at the content of each of the parts (in Chapter 2), not at just the outline above.

ANALYSIS AND REVISION OF ORGANIZATION WITHIN SECTIONS

Here are the four paragraphs of Marji's section on the third theme of Dan's personality. It is, as we saw in Marji's list of questions, the section she asked about in her journal. In addition to Marji's concern about whether or not to include facts in this section, the subject, love, seems hard to define and therefore possibly hard to subdivide and organize. Explain why you think Marji organized the section as she did. You may discuss both organization of the paragraphs and of the sentences within the paragraphs. Suggest any revision that you think would better accomplish the purpose of the section.

LOVE FOR PEOPLE

Beyond Dan's sensitivity and motivation is a genuine love for people. As discussed earlier, Dan values friendship highly and is sensitive to those around him. People have a great effect on Dan, making him both sad and glad.

Interactions with Others

In Figure 2 Dan lists the death of others as the number one thing that makes him sad. And he says further that he is sad when others are hurt—not when he gets hurt, but when others get hurt. Dan is focused on people around him, not himself. As mentioned earlier, Dan offers prayer requests quite frequently. The most common request is for a family member who is ill or injured. Again we see that Dan is worried about others, showing a love for those people.

[*Figure 2.* Journal entry on things that make Dan sad.]

In contrast, people also make Dan very happy. The number one thing that makes him happy is having friends, and in Figure 3 we see that he writes that his family makes him happy.

[*Figure 3.* Journal entry on things that make Dan glad.]

All of these ideas about people and their effects on his life shape the way Dan interacts with others. If Dan did not value others, he would not treat them with the respect and concern with which he does. One day a fellow student was upset and crying; Dan walked up to this person and told him it wasn't his fault and asked him to come and play. This is the kind of behavior that characterizes Dan.

Engages in Learning

The effect of Dan's love for others on his learning appears mostly in the form of his desire to know about others. Despite the fact that Dan's favorite subject is math, he seems to enjoy learning about people. The books he has read independently this year all deal with groups of people in the past and in the present. For example, he read one book about the Navajo Indians. He didn't have to do this; he could have read about rockets. The other effects of his love for people on his learning have been discussed previously. Dan is respectful and sensitive to other learners around him.

ANALYSIS AND REVISION OF COHERENCE

Explain the techniques that Marji's report uses to create coherence. Give examples of two or three techniques that lend coherence to the overall structure and of two or three techniques that improve coherence within sections, subsections, or paragraphs.

Questions for You

Having thought about organization and coherence in Marji's paper, what questions would you ask about organization and coherence if you were revising the whole paper? Do you have any remaining general or specific questions about the principles of organization and coherence in the social sciences? If you do, write them out for your teacher to see.

9

Adaptations: Organization and Coherence

Writers in all fields begin by offering their readers some version of "Here is the problem I will discuss, and this is what I believe to be the resolution of the problem." Natural and social scientists offer a hypothesis as the solution/explanation, people in the humanities state or imply a thesis, and business writers propose a solution through recommendations. In other words, writers use an introduction to indicate why the work of writing is being done (setting up a problem in the context of its background) and what the readers will learn (suggesting the resolution).

Next, writers roll up their sleeves and get to work—biologists and sociologists conduct their experiments, literary critics analyze the image patterns in a novel, and market analysts study statistics on market trends. With evidence in hand, writers tell their readers what it all means. They discuss and interpret their discoveries, and they structure this discussion in a way that verifies the resolution they offered in their introduction.

They conclude with a confident restatement of their hypothesis, thesis, or recommendations. Finally, they make their readers look ahead—to further scientific research, to a new way of understanding a book, or to a new company policy.

The preceding three paragraphs indicate the common features of the introduction, body, and conclusion of almost all professional writing. The similarity of basic structure makes it easy to crossbreed traditions; you can do that without major restructuring. For example, the spectrum of structures that we saw in the social sciences (in Chapter 8) reveals the adaptivity of traditional structures to individual fields and, by extension, to individual pieces of writing.

REASONS FOR ADAPTING ORGANIZATIONAL TRADITIONS

Any time that your purpose or audience is a nontraditional, cross-disciplinary mix you can create adaptations that are hybrids of disciplinary traditions—adaptations of style, focus, and organization. The preceding paragraph implies one reason for adapting methods of organization: Because different professional writing structures have much in common, it is relatively *easy* to tailor a structure to a particular situation.

Further, organizational adaptations are common because they are easy for readers to detect. In the second or two that it takes to flip through the first few pages of a paper that we are about to begin reading, we see the signs of organizational plans: headings that declare a scientist's IMRAD plan, the absence of headings that marks an interpretive essay in the humanities, the Executive Summary that announces familiar territory for a business manager. Therefore, if a physicist wants to declare that she is doing something unusual with the structure of a paper, a simple change from the IMRAD plan forcefully reorients the audience. Conversely, a music critic who uses the headings "Methods" and "Results" unmistakably tells his audience to expect something nonconventional.

An organizational plan is perhaps the most direct method of broadcasting a way of thinking—a particular problem-solving approach to the questions addressed in an essay. Consequently, if you know that you want to hybridize traditional ways of thinking (if, for example, you want to use a scientific problem-solving strategy to arrive at a business decision), you have good reason to think about adapting organizational plans—and to use the visual clues that notify readers of your adaptations.

EXAMPLES OF EFFECTIVE ADAPTATIONS

Traditional Organizational Hybrids

Most of the crosses we have discussed in earlier chapters have been unique crossbreeds created to meet the requirements of a unique set of writing conditions. But some hybrids are so common that they become traditions—

in the same way that many common domestic animals (varieties of dogs, for example) were created by crossbreeding but have since become well-established breeds with their own traditional characteristics.

Scientific studies (for example, testing the chemistry and physics of new products) are essential to many businesses, but those studies are ultimately used for business purposes—used to make business decisions. A company report, with a purpose that differs from that of both a traditional business report and a scientific paper, is a hybrid that has become a well-established tradition (for comparison, see the organization of a business report on page 213). A company report combines an IMRAD plan within a business-report plan. The prefatory section will contain, as in a business report, cover and title page, letter of transmittal, and table of contents. The prefatory section may also include *both* an abstract and an Executive Summary. The main text will include the IMRAD parts: Introduction, Method, Results, Discussion, Conclusion, *and,* as is characteristic of business reports, a section of Recommendations. Finally, the supplementary parts include Appendices and References. You see how well the two traditional forms merge in this cross.

Case studies which are written as part of the daily business of, for example, a psychologist's or social worker's practice (as opposed to case studies that are academic research projects) can be seen as a hybrid between social science and business documents. Look again at one of the examples from the social sciences section of Chapter 8. It begins with the IMRAD plan, modified for the social-science case study:

Reason for Referral	(Introduction)
Background Information	(Introduction)
Assessment Procedures	(Methods)
Assessment Results	(Results)
Summary and Conclusion	(Discussion)

But, because clinical psychologists and social workers are involved in the *business* of health and social care, the case study concludes with a section of recommendations.

Nontraditional Organizational Adaptations

One of my favorite short pieces of writing is a cleverly organized book review about three recent books on dying and after-death experiences (Neu). After a short, three-sentence introduction, the author constructs the whole review in the form of a table. Across the top of the table are the names of the three books, one heading each of three columns. A far left-hand column of the table lists a series of questions and prompts. So, for example:

	Book 1	*Book 2*	*Book 3*
What's dying like?	Sounds lovely.	Sounds wonderful.	Just hope you're asleep.
What feeling do you get after you die?	"I'm home. . . . I'm finally home."	It's nice being dead, but not worth killing yourself over.	Feeling? You're dead, damn it.
So, when you get right down to it . . .	We should love one another. It's God's plan.	Love can give life.	You're going to die. Get used to it.

The order of the questions and prompts in the left-hand column of the complete review corresponds to an organizational plan that could be used for a conventional book review, starting with background and ending with the book's main point. Neu's review begins with "What inspired the author to write the book?" and ends, "So, when you get right down to it. . . . " But the use of a table (and its organization) that is typical of the sciences and business immediately calls attention to itself. Its unconventionality also helps to convey the interpretive message—that each of the books is so narrowly focused on its own simplified view of death that its content can be reduced to a table of brief comments.

Another example of an organizational adaptation that grew out of a set of purposes that crossbred disciplinary traditions appears in the *Journal of Business Ethics*. The article is titled "Meta-learning About Business Ethics: Building Honorable Business School Communities," by Linda Klebe Trevino and Donald McCabe. The authors make an argument that ethics should be incorporated in the "hidden curriculum," which they define as all the places in which values are taught implicitly, and not just in the formal curriculum of business schools. They call this a "meta-learning" approach. Their purpose involves the critic's goal to interpret and evaluate, the sociologist's goal to conduct an objective study, and the businessperson's goal to make concrete recommendations.

Consider the article's headings and subheadings (I have tried to duplicate the format used in the published version).

- ABSTRACT (one paragraph)
- **Background and literature review**
  - (Introduction, unlabeled, seven paragraphs)
  - *The effectiveness of business ethics education* (one paragraph)

    - *The cognitive moral development approach* (five paragraphs)
    - *Beyond the classroom—the just community approach* (nine paragraphs)
    - *Application of the just community approach to business education* (two paragraphs)
- **A comprehensive proposal for business ethics education**
    - (Introduction, unlabeled, two paragraphs)
    - *The required business ethics course or module*
        - *Moral reasoning approach* (two paragraphs)
        - *A management focus* (one paragraph)
    - *Integration of ethics content throughout the curriculum* (one paragraph)
    - *The hidden curriculum—building honorable business school communities* (twelve paragraphs)
- **Conclusion** (five paragraphs)

The first page of the article, including the title, the Abstract, and the heading "Background and Literature Review," looks like a social science article. The second main section focuses on a proposal and thus looks something like a business document. But the organization of the two main parts is similar to organization in the humanities—the logical development of two arguments, the first explaining the inadequacies of current situations to teach business ethics and the second arguing for the authors' proposal. You should also notice in the second of the two main parts a humanities-style buildup to the main idea—the last subsection of the second main part is twelve paragraphs long, twice as many paragraphs as the total of all the subsections preceding it.

I have sometimes included the writing of history in the writing of the humanities and sometimes in the social sciences; in doing so I reflect widespread ambiguity about the location of history within the disciplines. That uncertainty would predict that historians would create interesting hybrids between the traditional organizational schemes of the social sciences and humanities. It follows that the *Journal of Interdisciplinary History* is a rich site for hunting hybrids.

The summer 1994 issue of the *Journal of Interdisciplinary History* includes a study of "Black Violence in Post–Civil War Louisiana," by Gilles Vandal. The article uses no Abstract or labeled introduction, and when first reading it, you may think that its opening pages look like an essay in the humanities. But on the fifth page the first heading appears: "Methodology and Scope of the Investigation." The word *methodology,* following several pages of unlabeled introduction, makes us think that perhaps the article will be organized in the kind of modified IMRAD plan that is common in the social sciences. Two later headings further divide the paper: "Patterns of Black Homicidal Behavior in Rural Louisiana" and "Black Homicidal Behavior." Each of the sections so designated contains tables of information (five tables in all), so we begin to think that these are Results sections and that the author is indeed using a modified IMRAD plan. We are then surprised to find no section labeled "Discussion" or "Conclusion," not even a space break to indicate a concluding section. Instead, the article simply follows the section on "Black Homicidal Behavior" to its logical end and then closes, reminding us again of organization in humanities papers. The hybridized purpose—to interpret a set of historical events, but to do so through an objective study of data—generates the hybrid organization.

Do not underestimate the importance and power that a writer can gain through an organizational format that gracefully fits a unique purpose. Douglas R. Hofstadter's *Gödel, Escher, Bach* (1979) was a hugely successful book (winner of a Pulitzer Prize) that develops its themes through the pattern of a fugue (a musical structure in which a number of voices repeat and imitate basic themes in counterpoint). As it weaves together the ideas and stories of Gödel, a mathematician; Escher, an artist; and Bach, a musician, its unique organization continually reminds us of its unique purpose; and the overall effect is striking.

Coherence in Organizational Hybrids

The simple point is one that we have made earlier. The more you are sure that your audience knows your organizational plan and can understand and anticipate your movement from section to section, the less you need to be concerned about transitions between sections. It follows, then, that what I have called traditional hybrids do not demand transitions between sections; and, in fact, the company reports and case studies that we looked at earlier do not utilize such transitions.

On the other hand, it also follows that nontraditional adaptations leave readers uncertain about the reasoning of the organizational plan. Therefore, if you create a nontraditional hybrid, you must also build the transitions that will keep your reader in the boat going down the main stream and not spinning off to some obscure backwater.

The author of "Black Violence in Post–Civil War Louisiana" ends his introductory section with a transition into the section on methods: "The statistical analysis of black homicidal behavior . . . , as I show, tells a different story." That new section begins by mentioning traditional approaches to historical studies of criminality, which refers back to the historical studies that are the focus of the last paragraph of the introduction. The author recognizes that his unique organization insists on careful transitions.

CAUTIONS

We have, in Chapters 3 and 6, discussed general reasons to be cautious about diverging from disciplinary traditions and creating unnecessary or ill-advised adaptations, and we do not need to repeat all of that. Rather, we can focus on just two points concerning organizational adaptations.

Because visual clues vividly identify traditional organizational plans, they just as vividly highlight nontraditional plans. You may, for example, go into a career as a chemist and decide to crossbreed the IMRAD plan of scientific papers with the kind of organization you used in a literature class: You include parts on methodology, findings, and discussion, but you do not separate them with the traditional headings because you think you have a reason for creating smooth transitions between these three parts. An editor of a scientific journal may *see* your departure from tradition and reject your paper without reading enough to understand your reasons for the nontraditional plan. It is a good general rule to avoid making readers guess your reasons; justify your reasons for an adapted plan early—in an introduction or an abstract—and clearly.

My second point is a version of something I have been saying throughout this book: Be well prepared before you adapt. We have been able to look at only a small sampling of patterns from the four disciplinary groups. You will probably come across many other traditional organizational plans for a variety of kinds of writing. If you work for a government agency, you will be required to follow prescribed organizational formats. In some of these formats you may see features that are typical of the disciplinary traditions we have discussed, and you may feel as if you therefore understand something of their nature. But you will also come across structures that have been developed for unique circumstances and bear no resemblance to any models we examined in this chapter. Organization is a powerful tool and should be used wisely and knowledgeably.

Exercise 9.1 Experimenting with Adaptations

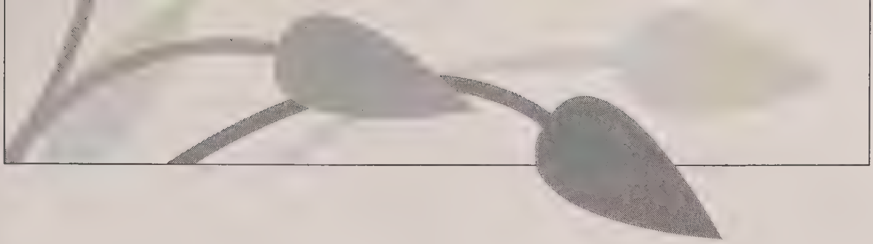
For this exercise use a paper that you are now working on. Crossbreed two different traditional models to construct an organizational plan (write an outline) for the paper. Explain your reasons for creating your plan. Discuss ways in which you would expect your organization to be effective and ineffective.

Part Three Conclusion

I am sure that you recognize the need to organize your writing, but I hope that you also realize just how positively an audience responds to a good organizational scheme. One decision about structure can transform a puny essay into one with punch. During my first semester in graduate school, I took a course in which the grade was based entirely on in-class essay exams. I did terribly in that class; I went into the exams with no confidence in my writing (I had been working as a scientist for the two years before starting grad school, and I had stupidly convinced myself that scientists could not write well), and I wrote some bad essays. On one exam, however, the prof asked us to describe the essential characteristics of one of the poets we had studied. I happened to remember that one of the poet's longer poems followed the adventures of a main character through seven stanzas, and the hero's activities in each stanza conveyed a different part of his character. I used this hero's seven characteristics to organize my discussion of the poet's seven basic features. On that essay, and that one alone, I got an A; and the teacher's comment—"Rarely have I seen an essay more effectively organized"—made it clear that my organization won the A.

I learned one more lesson from that experience. The content of that essay was better than that of my other essays—because of the organization. An effective organization not only arranges the ideas that you already have but also can give birth to new ideas. Form does generate content.

Stock your writer's toolbox with the basic tools for organizing in your discipline, learn to use them well, and teach yourself to use them creatively. But learn from writers in other disciplines as well, enabling yourself to adapt to the unique needs of each writing task. Finally, recognize the power of a good organizational plan and give yourself time to come up with one. Do not let yourself be satisfied with mediocrity; take a walk in the woods, read a poem, do whatever it takes to seek out that stroke of grace.



PART FOUR

Detail: Making Writing Clear and Convincing

WE ALL KNOW THE IMPORTANCE OF DETAIL. IF WE OFFER NOTHING but generalities and abstractions, our readers may not understand, may not be persuaded, and almost surely will be bored. So you have been taught to use detail—to clarify your ideas, to provide supporting evidence for the points you make, and to enhance your reader's interest. But you may not have thought carefully about the following questions, which express the focal points of this part.

- What kinds of detail (anecdotes, statistics, examples, descriptive observations, etc.) are appropriate?
- How much detail is necessary (when has a writer supplied enough examples, facts, statistics, etc.)?

Additionally, we must ask these questions about kinds and amounts of detail in the writing of the various disciplines. (Writers also need to decide how to present their detail—where and in what form it should appear, but we will attend to those issues in Part Five.)

Let me illustrate the differences among disciplinary uses of detail with a story. I am part of an Internet discussion group for people interested in the Brontës, three sisters who were Victorian novelists. One day a graduate student in the group sent a distressed message. She had gone to a professional conference and presented a paper on the relationship between Charles Darwin and the novels of Charlotte Brontë. A historian in her audience "trashed" her paper, she explained, because she had not shown evidence of the relationship between Darwin and Brontë; specifically, she had not presented concrete evidence in the form of letters between the two Victorian contemporaries, which the historian would call *primary* evidence. She asked the discussion group if they thought she was at fault for not having that particular detail. The English teachers who make up the majority of the group responded with unanimous sympathy for the grad student and disdain for the cruel historian. It was not necessary, they thought, for her to cite written correspondence because her purpose was to show thematic correspondence, which she had done with examples from the writings of Darwin and Brontë. The historian demanded a set of details very different in kind from that which the English professors expected.

Both parties wanted primary evidence, but what is primary evidence depends on what is of primary interest; it depends, in other words, on the focus of the writer's interest. The historian's interest focuses on historical documents, such as letters, that open the historical moment to our scrutiny. The literary critic's interest focuses on the books written by Darwin and Brontë, opening the pages of those texts for study.

You can thus see that this part is closely related to Part 1, "Focus: Deciding on the Point"; they are both about the *content* of writing. Part 1 emphasized theory, asking questions about what writers in the disciplines seek to know and believe is knowable. Theory does, of course, influence the kinds of detail that are appropriate in the disciplines, but in Part 4 we will get to the more practical issues of content: the examples and statistics and other details that make up the flesh and blood of writing.

10

Fundamentals: Detail

The following section reviews some basic ideas and complicating questions about kinds and amounts of detail.

KINDS OF DETAIL

Basics

The standard advice about detail is that you have got to have it. Beyond that, the detail about using detail gets rather thin, and what there is can be bewildering. Composition textbooks sometimes employ a confusing array of terms to discuss detail. Many of those terms describe the *nature* and *purpose* of the detail:

> concrete detail, specific detail, explanatory detail, descriptive detail, supporting (evidentiary) detail, etc.

Another set of terms indicates the various *types* of detail:

> facts, statistics, experimental results, findings, examples, anecdotes, observations, expert opinions, etc.

Yet another set denotes the *sources* of detail:

> primary sources, secondary sources, personal observation, etc.

Finally, there is a group of words used to judge the *quality* and *appropriateness* of details. Effective evidence must be current, sufficient, relevant, representative, consistent, comparable, reliable, pertinent, verifiable, etc.

You see how complex the advice becomes. Let me expand on each of these categories of definitions.

The Nature of Details To begin with, let's clarify two pairs of terms: specific/general and concrete/abstract. People tend to confuse *specific* with *concrete* and *general* with *abstract,* but the meanings of the words are fairly easy to distinguish.

Specific and *general* are words that must be understood in relation to one another in a particular writing situation. Writers specify within general groups or categories. If, for instance, you were writing an essay for a travel magazine about your criteria for choosing vacation sites, you could begin with the *generalization:* that you like nature. You could then *specify* that you like animals, and you might further *specify* that you like riding horses (and you therefore prefer to vacation where horseback riding is available). If you were writing a paper for a horse-riding association newsletter, you might begin with the *generalization* that you like riding horses (and then *specify* that your favorite trail-riding horse is the quarter horse). In other words, what is specific in one situation may be general in another.

The meanings of *concrete* and *abstract* are not dependent on a relationship in a particular situation; you can determine whether a word or group of words is concrete or abstract without knowing the context. Concrete details can be counted, measured, or apprehended through the five senses. That includes details like dates, statistics, amounts, and lengths as well as details that can be seen, felt, heard, smelled, and tasted. Abstractions are things that exist only in our minds: love, fear, kindness, the disciplines, the theory of relativity, and so on. When a writing teacher advises students to add more detail, that usually indicates the need for more concrete details. Concrete details, which will often specify your meaning, may be used for the purpose of clarifying an explanation, description, story, and so on; or they may serve to support an argument.

Complications

What do teachers mean when they tell students to "be more specific"? In practice, details that are specific may also be concrete, and vice versa. Further, your teacher may not be thinking in terms of the specific versus concrete distinction made in the preceding paragraph. However, the suggestion that you be more specific usually means that you should move to a higher level of specificity: from animals to horses to quarter horses. Being more *specific* in this way calls for you to sharpen your focus and be more *concrete.* Your readers can see the image of a chestnut quarter horse named Eddie with far greater concreteness than they can see the image of "animals" or even "horses."

What do teachers mean when they tell students to "add more specifics"? In this case the teacher is probably referring to the amount of detail, asking you to give more examples, facts, quotations, and so forth.

Basics

Purpose of Details We define the next set of terms according to the function of the details. Different kinds of details, in different situations, may be used to create clarity, support, or interest. *Explanatory* and *descriptive* detail, for example, functions to improve clarity, laying out the precise steps in a set of instructions, painting a sharp picture in a descriptive passage in a story, and so forth.

When writers talk about *supporting* or *evidentiary* detail, they are referring to details that serve the purpose of supporting an argument, making it more convincing. For different kinds of writing in different disciplines, different kinds of detail are considered appropriate. An example from a novel is an acceptable detail to support an interpretive argument, but statistical data may be required to support an argument in a sociology paper.

Types of Details Another set of terms designates types of details, and the definitions of these terms are fairly straightforward. You generally know the differences between *statistics, facts, expert opinions,* and *anecdotes.* The word *example* is more complicated because it must be understood in context. An example of the way violent crime has increased might be a set of facts or statistics, but an example of your love for an old friend would probably be an anecdote.

Sources of Detail Sources of detail are described as either *primary* (sources that are firsthand—based on your own or others' original work, historical artifacts, direct observations of nature, and so forth) or *secondary* (sources that are secondhand—based on analyses, interpretations, reports of someone else's original work, and so forth). So, for a literary critic, a novel is a primary source, and an article about that novel is a secondary source. For a historian of the Civil War, a letter written by a soldier during the war is primary; an introduction to a collection of Civil War letters is secondary.

For a physicist, observations of physical phenomena are primary; published studies in physics are secondary.

Quality and Appropriateness of Detail Writers apply certain tests to determine the quality and appropriateness of various kinds and sources of detail. A biologist may use observations of a field experiment, which could be appropriate for a scientific paper, but if the methods of making the observations are sloppy or the number of the observations is too small, the *quality* of the detail will be suspect. For someone writing a biography about a novelist, a secondary source—for example, a book about a novelist's fiction—usually provides less *appropriate* detail about the novelist's relationship to her spouse than would a primary source such as the novelist's private journal.

Complications

What might teachers mean when they say that the details in a paper are inappropriate? Statistics come under a lot of scrutiny because they are often misused or poorly constructed. Writers forget that statistics give us interpretations of data; that is, writers not only collect data, they decide how to organize, summarize, and present it as well. And those decisions require interpretations—decisions, for instance, about what numbers are more or less important than others. We will discuss statistics in more detail in the section on writing in the social sciences in Chapter 11.

Expert opinions can be poorly used. Writers often pass off as experts people who may not have much expertise. And even a genuine expert who is biased about a certain subject should usually not be used to provide detail about that subject.

Any detail presented as evidence should be subjected to tests of its quality. According to the terms commonly used in composition textbooks, supporting detail should be

> accurate, current, pertinent, relevant, reliable, representative, sufficient, and verifiable.

Exercise 10.1 Using Specific and Concrete Details in Your Own Writing

Select a piece of your own writing, perhaps something that you have drafted but not yet completed. Analyze it in terms of the categories we have established thus far in this chapter. What is the general purpose of your detail?

What types of detail have you used? What were your sources, and would you call them primary or secondary? How strong is the quality of your details, and how appropriate are they for your particular purpose and audience? Having analyzed the use of detail in your paper, what changes would you now make?

AMOUNT OF DETAIL

Basics

How many examples, anecdotes, or opinions does one need to clarify, support, and interest? Obviously neither I nor composition textbooks can offer concrete advice about how much detail to use in various situations—the determining variables are too complex. You must decide after considering the audience, the type and purpose of the paper, and the type, purpose, and quality of the details. A single incontrovertible fact may be enough to support an argument, but hundreds of bits of information may be necessary to compile a convincing set of statistics. Further, if the purpose of a paper is simply to trouble readers enough to get them to reconsider an issue, a quote from an expert whom the audience trusts may do the job.

Remember that a writer's use of detail as convincing evidence works much as it does for a lawyer in a courtroom. A lawyer may need reams of circumstantial, small, loosely related items of evidence to convince a jury; or one reliable testimony from an eyewitness could be sufficient. Therefore, student writers must know the kinds of detail that will be most effective for an audience before they can judge how much detail to use.

Complications

If I have a small number of details, but they are really good, shouldn't I be able to turn in a shorter paper? A writer has to know how to create a sense of wholeness in a paper. Even if you have one spectacular, completely convincing piece of evidence, you will want to present it with sufficient elaboration. Imagine watching a courtroom movie: Out of the blue the good-guy lawyer who has been able to find nothing to help his client surprises everyone with a stunning, case-closing discovery. If you were the director of this movie, would you shift to a new scene immediately after the evidence is presented, or would you let the scene linger, watching the faces of the judge, jury, lawyers, and so on? Any good storyteller, and every good writer is to some extent a good storyteller, will let readers savor that one climactic detail. On the other hand, anyone who watched any part of the O. J. Simpson trial realizes how boring it is to listen to massive amounts of extremely minor detail. You must, therefore, find an effective balance between the number of your details and the amount of space you give them; you might allot the same amount of space to several relatively weak details as you would to one powerful detail.

Exercise 10.2 Analyzing the Right Kind and Amount of Detail

The paper reproduced here is a greatly modified version of a paper written by a student in a first-year composition class. It is an essay about memory and how the past can influence the present. Analyze the use of detail, asking the same questions that you did in Exercise 10.1 (purpose, types, sources, and quality/appropriateness of the detail). Additionally, determine if there is enough or too much detail in each paragraph.

Finally, revise any paragraphs that do not make the most effective use of detail (if you decide to add details, you will have to imagine yourself in the author's shoes and imagine new details). If you do not revise a paragraph, you should use your analysis of the kind and amount of detail to explain why you think the paragraph is effective as it stands.

Your teacher can show you the original essay so that you can compare it to your revisions.

The Aromas of My Life

1 Many things remind me of the past. As snapshots in a photo album, all senses, such as that of smell, color our memories. Sometimes sight, sound, touch, or hearing inspires memories, and sometimes smell does as well. Some aromas conjure up images of the past. Other times, however, the aromas of our daily lives often go unnoticed as constant exposure desensitizes the olfactory sense.

For example, when I was little, occasionally my dad would bring me to work with him. My dad works at the office of a small publishing company. It publishes paperback books on home improvement and had sales of about $500,000 per year, though that figure has dropped as the large booksellers have developed their own lines of home-improvement books. At any rate, I loved to accompany my dad because of the smell. The office always carried the fragrance of new paper from the computer printouts. Now, however, since I work there after school, I am accustomed to the computer paper fragrance. I no longer notice the scent, nor do I inhale deeply as I step through the door, like I did as a child.

Although the above example provides an illustration of how scents may go unnoticed after repeated exposure, some aromas linger throughout time. One such example in my life is my grandparents' house. My grandma uses scented air fresheners of various kinds. No matter how often I visit my grandma, the smells envelop me as I walk through the doorway.

Other scents conjure up different images from my life. The odor of antiseptic reminds me of the times I brought my cat to this vet. The scent of roses transports me to the warm summer nights. The scent of newly mown hay brings me back to my grandparents' barn.

5 A musty, damp odor arouses the image of curling up in my sleeping bag in our dark green canvas tent during my family's camping trips. The same odor also summons up the mental picture of vacationing at my grandparents' cottage, the odor enveloping us as we enter.

These, among many, are the aromas of my life, personal memories that make up the collage of my essence. They blend together to create a weaving of interlocking memories. Recollections form the fabric of our lives and present us to ourselves and to others. Our experiences and the way in which we remember them define who we are and why. They connect us to our pasts, our loved ones, our friends, and those things or people with whom we share ourselves and our experiences.

Therefore, whenever I detect these familiar smells, they transport me back in time.

As photo albums inspire memories, so too do the aromas of our experiences, the scented "snapshots" mounted in the scrapbook of our lives.

11

Traditions in the Disciplines: Detail

A study that compared essays written by college teachers and by students concluded that the purpose of the teachers' writing was generally to add, challenge, or redefine knowledge, but the student writing usually tried to summarize knowledge that was already generally agreed on (Barton). Therefore, professional writing, in that it competes in the field of knowledge production, demands more rigorous use of appropriate concrete evidence than does writing that aims only to generalize about agreed-on knowledge. In other words, as you learn to write in a discipline and prepare for a profession, you will need to learn what kinds of detail your field accepts as convincing evidence, and you will need to learn how to use such detail.

You should have no trouble seeing that different fields utilize different kinds of detail. Look at almost any piece of literary criticism and you will see extensive use of quotations, primarily from the literature being written about. These passages are presented as examples that clarify and substantiate the author's thesis. Look at almost any piece of science writing and you will see tables of data. These numbers (often transformed into various kinds of graphs) summarize the measurements that the author has taken, analyzed, and presented to validate a hypothesis.

As I pointed out in the beginning of Part 4, what a writer considers "primary evidence" depends on the writer's focus, which, as we learned in Part 1, differs among the disciplines. So, even people from the somewhat closely related fields of literary criticism and history demand different kinds of details.

Both among different disciplines and within individual disciplines people hold a variety of beliefs about what can be known, and these beliefs will determine the kinds of detail they value. Some literary critics, for example, believe that we can base interpretations on what an author intended to convey in his or her work, so they might consider it valuable to have access to the author's letters and journals. Others think that we cannot know and therefore cannot be concerned about an author's intentions, so they find only the literary work itself a useful source of detail. But no literary critics believe that we can measure, with statistical significance, the degree to which Charlotte Brontë's reviewers understood her.

For most of this century, people in the natural and social sciences believed that they could study subjects with objective detachment and thus discover measurable truths. The philosophy on which they grounded this belief is called positivism. Today most natural scientists continue to believe that if they use proper controls and effective instruments they can gather true findings; they can, for example, use appropriate techniques and instruments to determine the real chemical makeup of an unknown compound.

The situation for social scientists is far more complicated. Many social scientists no longer believe that they can study something as complex as human social interactions with detached objectivity in the hope of discovering truth. Many social scientists conduct qualitative rather than quantitative research. For such qualitative studies they might seek detailed examples of individual cases rather than masses of statistics; to these examples they apply strategies of interpretation, similar to those literary critics use. That is not to say that they do not seek true findings, but they are less likely to talk about any one certain, objective truth.

Business writers must always be able to use a variety of kinds of detail because they write everything from public relations releases that utilize anecdotes for detail to productivity reports that employ sophisticated statistics.

Further, if a large enough group of writers in any field adopt common beliefs about what can be known and how best to seek knowledge, they may also come to agreement about what kinds of details are appropriate in the studies they conduct. They will thus establish traditions for using detail within their own subdiscipline or professional specialization.

Consider two primary points: First, the effective use of detail may be the most consistent feature of successful writing in the disciplines *and* the feature least understood by professionals. I recently asked a group of teachers in the social sciences how they would teach students to use detail effectively in qualitative studies. One said, "I know it when I see it, but I don't know how to explain it," and the others agreed. The apprentice writer who can quickly grasp the traditions in a field rather than having to gradually develop a "feel" for them may well have an advantage.

Second: Disciplinary traditions are always changing. This truism will become especially clear in our discussion of the social sciences in the next section, but it is to some degree true in all disciplines. Further, you are learning the ropes at a difficult time because all fields are undergoing challenges to their traditional beliefs about what can be known. Once again, therefore, examining the traditions in the following section should train you for the kind of study you must continually practice during your career. Be alert to what the standards are, understand the reasons that they have become standards, and then you will be better able to adapt to the ever-changing reality that all writers encounter.

SOCIAL SCIENCES

We begin our study of disciplinary traditions with the social sciences because they tell us a powerful story about the way traditions develop and change. We will discuss not only the use of statistics in quantitative research, tricky enough by itself, but also the various kinds of detail, including statistics, used in qualitative research in the social sciences. After discussing various kinds of detail, we will consider the ways in which choices among kinds of detail influence the amount of detail.

Kinds of Detail

Quantitative and Qualitative Research

Comparison of Quantitative and Qualitative Research One way to introduce you to the many kinds of detail used in the social sciences is to discuss two basic approaches to research: quantitative and qualitative. During the many decades when most social scientists believed that they could conduct objective studies that would reveal truths about human society and culture, the serious, "hard" science was quantitative. Quantitative research uses the language and tools of natural science—mathematics, including data that are analyzed statistically. Its practitioners believe that precise measurements and statistical analyses yield the most objective, reliable, and valid results.

Qualitative research, as the name makes obvious, focuses on qualities, on characteristics that are described interpretively rather than measured numerically. Qualitative research has always been used by quantitative researchers. They might begin a project by interviewing members of a group in order to understand the group better and thus develop a sensible model that they could then use for quantitative research. So qualitative work has long been considered exploratory, a kind of preparation for quantitative work.

In the past couple of decades, theorists in the social sciences have increasingly challenged the assumptions of positivism, arguing that we cannot expect to find hard, mathematical truths about social phenomena. At the same time, qualitative research has become more and more valued in its own right. Many books and articles have been published on qualitative methods, qualitative studies appear in journals that once published only quantitative research, and some journals (such as *Qualitative Sociology*) have been formed to promote qualitative research.

At this point in your training, it is wise to resist the extreme position that objectivity is impossible in either quantitative or qualitative research. While writing this section I received a letter from a person writing a book on the use of statistics in the social sciences; in it he said, "Positivism bashing seems to be the sport of choice among certain vocal theorists at present. But most practicing social scientists gather data, analyze it, and publish their results in the same way they would have if these people had never spoken." Now I cannot tell you which side in this debate is right or most likely to dominate in the near future, but I can remind you that the current debates among social scientists are keeping the field in a state of flux, and you should prepare yourself to step into these changing currents by understanding the differences and similarities between quantitative and qualitative research.

Let me describe some basic features of quantitative and qualitative research. Quantitative research, in order to exert careful controls and gather precise data, is narrowly focused. It aims to be as objective as possible, relying on numbers, laws of probability, and statistical tests of validity.

Qualitative research is broadly focused; it seeks holistic knowledge of complex systems. Its practitioners admit the subjective nature of their work. Like studies in the humanities, qualitative research is primarily *interpretive,* working with words. "Rich descriptions" is terminology used by qualitative researchers, and these words should remind you of the goal of enrichment that we have discussed when talking about the humanities. The *Handbook of Qualitative Research* draws the distinction between quantitative and qualitative in these terms:

> Quantitative studies emphasize the measurement and analysis of causal relationships between variables, not processes. (Denzin and Lincoln 2)
>
> Qualitative research [involves] an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things

> in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them. (Denzin and Lincoln 4)

These quotations illuminate a difference in *purpose.* Imagine two social scientists interested in the relationship between watching violent programs on television and committing violent crimes. If the researchers' purpose was discovering cause-and-effect relationships, they might choose a quantitative study. They might survey random samples of groups who had and had not committed violent crimes, measure the average number of hours each group watched violent TV programs, and determine if there is a statistically significant correlation. The purpose of this quantitative kind of study is prediction; a significant correlation might predict that people who watch *x* number of hours of television violence are, to a statistically measured degree, more likely to commit violent crimes than those who watch no television violence. These results could then be used to support a law to reduce the amount of violence on TV.

The purpose of a qualitative researcher, on the other hand, might be to understand and describe some factors in the complex and tenuous relationship between watching violent TV programs and committing violent crimes. So that researcher might select a family, or a group of people living in a small community, on whom to conduct a study. The researcher might live among the people, observe their lives, interview them about their actions, thoughts, and motivations, and record conversations with and among them. The data collected would then be subject to extensive analysis and interpretation, and an article or a book would describe the case study in detail, noting the major themes of the findings without trying to reduce them to one or two predictable cause-and-effect relationships.

Think about the differences conveyed through the following statements of purpose. The first comes from a quantitative study in the *American Journal of Sociology:*

> This article explores the contention that the concentration of women in certain jobs that accommodate parenting can help explain both the occupational gender segregation and the lower wages received by women employed full time. (Glass and Camarigg 131)

The article uses statistical analyses to examine the exact correlations among the limited number of variables in the above sentence ("concentration of women in certain jobs that accommodate parenting," "occupational gender segregation," and "lower wages received by women employed full time"). The study is narrowly focused, controlled, objective, and dependent on statistically tested measurements.

The following statements appear in the introduction to a book-length report of qualitative research (titled *Social Worlds of Children Learning to Write in an Urban Primary School*). A subsection of the introduction called "Purpose of the Book" begins,

> I explore how Jameel, Lamar, and their classmates used varied kinds of language art forms and traditions. . . . (Dyson 5)

In the paragraphs that follow, several purposes are outlined:

> I aim to contribute . . . to the ongoing conversations about education. . . .
>
> A second . . . goal is to illustrate the sociocultural intelligence of young child composers. . . .
>
> I aim to allow young children's composing processes sociocultural depth and breadth. . . .
>
> Finally, . . . I aim as well to allow insight into the successes and challenges confronted by teachers and children. . . . (Dyson 6)

When we extract the core of each statement, we see the book's goals: contributing to conversations, illustrating intelligence, and allowing depth, breadth, and insight. You see the subjective, interpretive, and complex nature of this study.

Interrelationships between Quantitative and Qualitative Research The preceding definitions should help you to understand the different characters and purposes of quantitative and qualitative research, but those distinctions blur on closer examination. For one thing, people conducting qualitative research do make measurements. They might make exact counts of language habits in the conversations they record and then present findings about these habits in data tables; they might even use statistics to help them analyze data. Social scientists have published a substantial body of materials on using computers to standardize and systematize qualitative studies, thus offering such studies greater objectivity.

Nor do quantitative studies always typify the definitions offered above. Some people who carry out quantitative research do not share the positivist belief that they can discover objective knowledge. They begin with subjective assumptions about a subject they want to study and enrich their understanding of the subject by employing quantitative methods to describe its features.

Further, many, perhaps most, studies make use of both quantitative and qualitative methods. I mentioned earlier that social scientists often conduct exploratory qualitative studies to help them devise quantitative research plans. But the opposite scenario also takes place. A sociologist at my college began investigations into sexual abuse by conducting several quantitative studies, but after gathering results he decided that he needed to examine some themes in greater depth through a series of interviews, complementing and enriching his quantitative work with qualitative research.

I do not intend to confuse you any more than is necessary; our earlier definitions of quantitative and qualitative research are not inaccurate. It is simply necessary for you to recognize that all social scientists seek knowledge of social phenomena, they rely on empirical evidence (evidence drawn from observation and experimentation), and they often need to employ a combination of methods to seek answers to their questions.

In fact, many social scientists practice what is called "triangulation," a term used to denote research that systematically combines methods. In addition to triangulating quantitative and qualitative research methods, one might triangulate data, collecting it from various sources and through various methods for the same study, or triangulate investigators, combining the separate work of two researchers working on the same subject, or even triangulate theories, constructing different hypotheses based on different theories and then analyzing the combined findings.

Some social scientists go even beyond triangulation to "crystallization." According to the *Handbook of Qualitative Research*, "Crystals . . . reflect and refract, creating ever-changing images and pictures of reality. Crystallization deconstructs the traditional idea of validity, for now there can be no single, triangulated truth" (Denzin and Lincoln 482). You can see why the editors of the *Handbook of Qualitative Research* write in their introduction, "We are in a new age where messy, uncertain, multivoiced texts, cultural criticism, and new experimental works will become more common" (Denzin and Lincoln 15).

Keep these complexities in mind as we move ahead to discuss kinds of details *usually* found in quantitative and qualitative research.

Kinds of Detail in Quantitative Research—Statistics Both qualitative and quantitative researchers use some statistics. But if you ask a social scientist what kind of detail is used in quantitative research, you will get a short answer: statistics. So this section on kinds of detail in quantitative research seems the right place for an introductory survey of "stats."

Most social science students take at least one course in statistics because they must know how to compute (or, more likely, run a computer program that will compute) standard deviations, chi-square tests, *t* tests, and other statistical calculations. These procedures help you to compose clear statistical descriptions and tell you if your data reveal significant findings. In what follows I will not attempt to explain any of the mathematical procedures of statistics; I merely hope to introduce you to some basic processes that you will use for conducting and writing research in the social sciences.

Statistics are mathematical tools that we use when we are dealing with uncertainty. We use statistics to overcome the human tendency to think, for example, that because we have flipped a coin five times and every time it has come up heads, the odds have increased that the next toss will come up tails. The laws of probability, on which statistics are based, tell us that every individual coin toss has a 50 percent chance of coming up heads—or tails—no matter what has happened in previous coin tosses. If we record a very large number of coin tosses, there is a very high probability that we will record about equal numbers of heads and tails; if we do not, we know that there is probably something wrong with the coin or the coin tosser. Laws of probability can predict likely results from a large sample of events but cannot predict individual events.

Statistics also help us to overcome the uncertainty that results from errors in our measuring tools. If we had a machine built to measure, for example, the amount of ozone in a sample of air, and we knew that the machine never made a mistake, we would not experience any uncertainty when the machine told us that a sample of air contained x amount of ozone. We could take one measurement and believe it to be accurate. Unfortunately, machines and other measuring tools, including and especially humans, are never without error, so scientists take many samples and average them to arrive at a statistically valid measurement. And the statement of such a measurement will include information about its uncertainty: the mean value (mean is the statistician's word for the simple arithmetic average) will be reported as x number of parts per million *plus or minus* the degree of uncertainty. It is easy to imagine how much more necessary it is to rely on statistics when social scientists study subjects of great uncertainty—reasons for violent behavior, patterns of political change, cultural traditions, and so forth.

Those who do not often work with statistics tend to worry most about how to analyze a set of data to determine if it reveals anything valid, but experienced social scientists know that the first point of concern must be in designing a method for collecting data in the first place. After collecting data you need to decide how to summarize it, organize it, and argue from it. Those decisions will depend on your purpose. Do you want to use your data to construct statistical descriptions? For example, you might want to describe the percentage of a population planning to vote on a political candidate or the chances of being in an airplane accident. Or do you plan to analyze your data to draw inferences and make decisions? You might test a hypothesis about the relationship between a candidate's statements on military spending cuts and changes in his or her approval rating and then base campaign strategies on your conclusions. These two purposes, describing and drawing conclusions, correspond to the key terms in the subtitle of Part 4 of this book, "Making Writing *Clear* and *Convincing*." Let's consider a few basics about using statistical detail.

Sampling Most statistical studies gather data from a *sample,* a portion of a group to be studied. Surveys are typical methods for collecting data through samples. When you are designing such a study, remember that your ability to construct useful statistics depends on two factors: the randomness and size of your sample. A random sample (social scientists often use the term *simple random sampling,* abbreviated SRS) is essential for useful statistics. If, for instance, you want to know whom the students at your school plan to vote for in an election, you could interview every one of them and get a very accurate description of the likely election results. However, if your school is large, it would be impractical to survey all the students, so you would have to select a sample. If you were to sample only your friends, no one would pay attention to your findings; they would be too clearly slanted, or biased; instead, you would use some method (such as a computer program or a table of random digits) for generating a truly random sample.

Even after selecting a random sample, errors may creep into your methods. If, to continue the above example, you were conducting your voting survey over the telephone, some students might not have phones, some might not be home when you call, some might refuse to answer your questions, some might lie because their friends are listening, and so on. So you would have to increase your sample size to overcome these problems. On the other hand, if you could determine that most of the students who did not have a phone were poorer than those who did and that poorer students tended to favor one candidate over another, your sample results would be biased even if the sample size were increased, and you would have to adjust your methods in other ways.

If you were to generate too small a random sample (ten students out of a population of ten thousand), the chances for unreliable results would be very high. But good sampling methods might allow you to collect findings that have, say, a 90 percent level of confidence (more on confidence levels later in the section titled "Drawing Conclusions from Statistics") by surveying what might seem a small percentage of a population. And it might not be worth the extra cost to get results that yield only a slightly higher confidence level. Generally speaking, however, the larger the sample, the more accurate the results.

If you were to conduct an experiment rather than simply make observations through a sampling, you would need to impose controls to stabilize all conditions and variables except those you want to study. Then you could measure the effects of some change you impose on the object of your study. If you wanted to determine the ways in which adding a chemical effects the stability of a plastic, you could set up a lab experiment in which you keep all factors controlled (temperature, humidity, sources of your chemicals, etc.). Then you would run a *control group*—a series of tests without the new chemical—and an *experimental group*—a series of tests in which you add the new chemical and test its effects in ways that you can measure with precise instruments.

However, an experiment in the social sciences can prove far more challenging. Try to imagine how you would test the effects of a new teaching method on the rate at which a child learns to read. You could set up a control group (children being taught reading in a traditional manner) and an experimental group (children being taught reading with the new method). But it would be extremely difficult to control the other variables involved: the intelligence of the children, the ability of the teachers, and so on. Once again, in order to accumulate believable data you would have to use a large and random sample.

Measuring In order to conduct a statistical analysis of something, you must be able to measure—and to encode your measurement in a number—the variable property that you wish to study. For example, we all take measurements to study everyday things such as properties of climate—rainfall and temperature. When you wake up, you may want to know the temperature before you decide what to wear. You look at the thermometer, which yields a measurement of 67 degrees F. If your thermometer is unreliable or it is a windy day and air pockets of varying temperatures are floating by your thermometer, you may look at it several times over a period of time, making a kind of random sampling and averaging your measurements. Or, if you have had the thermometer for a while and you know, through your history of sample measurements, that it tends to be within five degrees, higher or lower, of the actual temperature, then you can say that it is 67 plus or minus 5 (most probably you count on the more accurate thermometer at the TV station).

The thermometer is a measuring tool that uses an interval scale of measurement. That is a scale using equal intervals between items on the scale, in this case equal intervals between each degree of temperature. Other measurement scales are called ratio scales (using equal intervals and an absolute zero starting point, such as distance, length, or weight scales), ordinal scales (using relative ranking of things, people, traits, such as letter grades), and nominal scales (using classes of things, such as names of tribes or identifying numbers on a baseball player's jersey).

When we combine the facts that we can use different measuring tools and different measuring scales and that most measurements in the social sciences are not as simple as our earlier temperature example, we see how difficult it can be to take measurements that are *valid* (truthful, realistic) for the property we want to measure. You might measure voting trends through a survey (a measuring tool), in which you could simply ask people if they planned to vote for the Republican or Democratic candidate; then you could count the votes and come up with numbers (on an ordinal scale) reflecting what percentage of your sample selected the Republican and what percentage the Democrat.

But what tools and scale would yield a valid measurement of a property like sympathy? First you would have to define the property as precisely as possible—in some way that would make it measurable in believable and valid terms. So you would not, in other words, define a sympathetic person as one who cries when watching *It's a Wonderful Life* then start counting people's tears.

If you decided that you could not develop valid measures (you would conduct more than one measurement of such a complex subject), you might decide instead on a qualitative study, in which you would interview nurses or psychologists or some other group of people whose job requires them to sympathize with others' pain.

You would also need to construct your measurements so as to achieve internal and external validity. That means that your data should yield accurate and relevant statistics about both the group you sample (internal validity) and the larger population that your sample represents (external validity).

Organizing, Summarizing, and Presenting Data Social scientists use several methods of organizing, summarizing, and presenting data. Among the most common are tables and graphs, percentages, averages, and frequency curves.

Tables, pie charts, bar graphs, and other such visual summaries of data make it easy to comprehend large amounts of statistical information. We will discuss these graphic tools in Part 5, so I will defer that discussion until then.

We regularly hear or read statements about *percentages*. My school conducted a survey as part of an evaluation of our writing program, and one of the survey items asked faculty members to respond to the statement "The quality of student writing has deteriorated over the past ten years." Faculty could respond by marking one of four numbers: 1 = definitely, 2 = probably, 3 = not noticeably, 4 = no, it has improved. I accumulated all the responses in a table, called a frequency distribution, and then summarized the data in percentages: 8.5 percent of the faculty believe student writing has "definitely" gotten worse, 37 percent said it "probably" has, 48 percent said "not noticeably," and 6.5 percent thought it had improved. Percentages are an easy-to-comprehend method of summarizing data.

We are also used to hearing reports that the *average* college student smokes 18.3 cigarettes per day, or the average college professor undergoes psychological counseling 6.3 times during his or her career (those are, by the way, fictional averages). Statisticians work with three basic measures of average: mean, median, and mode.

A mean is the simplest kind of average; add any set of numbers and divide the result by the number of numbers in the set—as in the following example, where 12.33 is the mean of the 9 numbers.

$$15 + 10 + 17 + 3 + 32 + 17 + 3 + 3 + 11 = 111$$

$$111 \div 9 = 12.33$$

The median is the midpoint of a sequence of numbers arranged in increasing order. So the median of the set of numbers used in the above example is 11.

3, 3, 3, 10, **11,** 15, 17, 17, 32

The mode is the most frequently occurring number in a set; the mode in the above set is 3 because there are more 3s than any other number.

The mean, median, and mode are tools for describing a central point in a set of data (and the above example shows you why the mode may be less useful than the mean or median for accomplishing this purpose). Remember, however, that we use statistics to help us understand things about which there is some uncertainty, about which there is not a *fixed* central point. That is another way of saying that the questions asked in statistical studies are not answered in a single, predictable way. The data collected in studies vary; they are *distributed* over a range. So helpful descriptions of data must indicate both a center (a mean value, for example) and the variability, or distribution of the data.

Statisticians often describe distributions with frequency curves. These are less common in our everyday experience than graphs, averages, and percentages, but they are essential tools for presenting data. A "normal" curve looks like the following diagram (you can see why it's also called a "bell" curve). It describes many distributions, including data like SAT scores (Figure 11.1). The mean SAT score for any one of the SAT tests is 500, so you see that as the center, or peak, of the curve. Using mathematical formulas and the results of SATs, you can calculate the *standard deviation,*

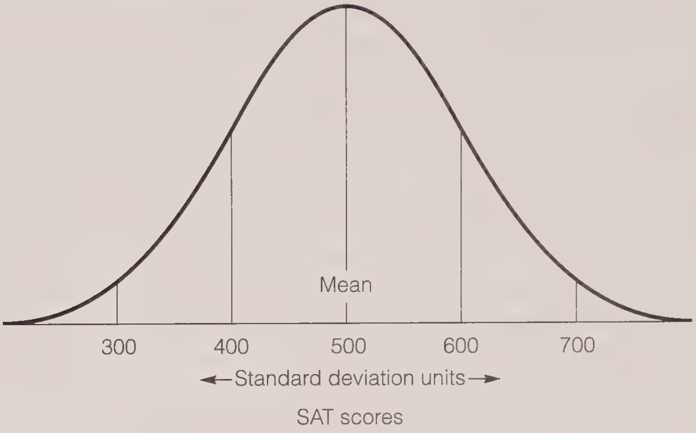


FIGURE 11.1. *Frequency curve.*

which is a measure of the spread, or variability of the scores. The standard deviation for SAT scores is about 100.

Certain regularities of normal curves make them very useful: One standard deviation in either direction away from the mean (in our SAT example, scores from about 400 to 600) will include 68 percent of the data (scores of the people who took the SAT); two standard deviations in either direction away from the mean (scores from about 300 to 700) will include 95 percent of the data; and three standard deviations in either direction away from the mean (scores from about 200 to 800) will include 99.7 percent of the data.

Because possible scores run from a minimum of 200 to a maximum of 800, we can see that there is a fairly wide spread, which makes the scores useful to college admissions boards. Imagine that the standard deviation was calculated to be only 10. The curve would be narrow and highly peaked. Two standard deviations in either direction from the mean of 500 would include scores from 480 to 520; 95 percent of people taking the test would be getting very similar scores, which would make it a useless test for admissions boards. Frequency curves, however, do yield useful descriptions of the average and variability and thus allow us to judge the value of the test.

Drawing Conclusions from Statistics When I used the word *useless* to describe an SAT with a standard deviation of only 10, I drew a conclusion, I made a judgment about the value of the hypothetical test based on the data represented by the frequency curve. Drawing such conclusions is often the goal of collecting and analyzing statistics. But the ability to draw conclusions depends on the reliability of the statistics, so statisticians also employ various tests on their data.

One way to calculate the validity of statistics is to determine a *confidence level.* Political pollsters can run several surveys and compute the percentage of respondents who said they would vote for candidate A in each survey; they can then calculate a confidence level. They may be able to say, for example, that they have a 95 percent confidence level that between 51 and 56 percent of the population will vote for candidate A. This means that in 95 out of 100 elections the actual percentage of people who vote for A will be between 51 and 56 percent. So candidate A should feel pretty safe but not foolproof (5 times out of 100 the vote might fall below or above 51 and 56 percent).

The candidate probably will not try to attain a higher level of confidence because to do so would involve taking a much larger—and therefore much more expensive—sampling just to gain a couple of extra percentage points of confidence. Producing statistics with a high confidence level depends on having a sufficiently large, random, and well-designed sample, but the size of the sample must increase as does the *variability* of the responses. The broader the distribution of data you collect, the more data are necessary to achieve a high level of confidence.

Statisticians also calculate *statistical significance.* The first step in testing for statistical significance is setting up what is called a null hypothesis, a hypothesis that is essentially the negation of the hypothesis that you believe is true. Suppose, for example, that you want to study the relationship between stressful jobs and health; your hypothesis is that people with stressful jobs become sick more often than those with low-stress jobs. Let's also say that an earlier study proved that air-traffic controllers have a relatively high-stress job and assembly-line workers have a relatively low-stress job. You could then take a large, random sample of air-traffic controllers and assembly-line workers and measure the numbers of days of sick leave taken by each group during a one-year period.

In this case your null hypothesis might be: If there were no difference in stress between the two jobs, the rate of sick leave for each group would be within the same range as that which was observed. In other words, the null hypothesis asserts that no significant relationship between job stress and sick leave exists—that stress does not affect health.

Now you test the significance of the results of your survey. The survey shows that air-traffic controllers took 22 percent more sick leave than did assembly-line workers. Here is the key question: What are the odds (calculated by the laws of probability) that you would see that large a percentage difference between the two groups of workers if stress did not affect health. You enter the appropriate commands into your computer, and it calculates that you would get the survey results you did only 6 percent of the time if your null hypothesis were true. If the null hypothesis is true, stress has no effect on health and the results you gathered are accidental. But your significance tests tell you this: The odds are very much against your accidentally seeing such a large difference between air-traffic controllers and assembly-line workers; if stress did not affect health, you would record such a difference between the two groups of workers only 6 out of every 100 times you surveyed them. Your study has, therefore, a 6 percent significance level.

That is pretty good you think—very convincing odds that your hypothesis is true. But a longtime standard for most social science journals is a 5 percent significance level. Of course, what you consider to be a convincing level of significance depends on what your audience is being convinced of. If your study aims simply to describe a relationship, such as that between stress and health, even a 10 percent level of significance might convince your audience that you are on to something. If, on the other hand, your study is being conducted within a business setting and will be used to make a decision about investing a large amount of company resources, your audience may need a better level of significance to be convinced.

Examples of Detail in Quantitative Research Most of the examples in our discussion of statistics describe situations in which researchers collect data themselves. Social scientists also use already-available data for quantitative studies. The government's huge collections of data, for example, are often used by researchers. If you use available data, you will need to include in your Methods section (sometimes called "Data and Methods") a description of how the data were collected. A 1992 article from the *American Journal of Sociology* ("Gender, Parenthood, and Job-Family Compatibility"), to which I have referred earlier in the book, makes use of data from a 1977 national "Quality of Employment Survey." Figure 11.2 reproduces one of the eight tables presented in this twenty-page article (Glass and Camarigg 139).

In addition to detail presented in tables, quantitative researchers include graphic representations of detail. Figure 11.3 presents a set of bar charts from an article on racial segregation (Farley and Frey 29). You should observe the notations at the bottom of both the table and the set of graphs. The authors indicate the statistical significance of certain pieces of data (for example, $p < .05$ indicates a 5 percent level of significance).

A Final Word about Statistics These few pages cannot, of course, teach you to design statistical studies, summarize and present data, or conduct tests of validity and draw conclusions. The intent of this section is to make you more concretely aware that you will have to learn to navigate these processes.

TABLE 2

Means by Sex for Variables Used in the Analysis

	Total Sample		Parents	
Variables	Males (*N* = 793)	Females (*N* = 493)	Fathers (*N* = 427)	Mothers (*N* = 213)
Hours worked per week	45.20	38.30**	45.88	37.36**
	(10.58)	(8.32)	(9.71)	(8.5)
Years at present job	7.69	5.70**	7.77	4.52**
	(7.40)	(6.17)	(7.08)	(4.99)
Education (in years)	12.48	12.40	12.58	11.98**
	(3.02)	(2.98)	(3.06)	(2.66)
Age	37.54	36.27	36.64	33.99**
	(12.58)	(13.02)	(9.94)	(8.50)
Years of job experience	20.03	14.04**	19.04	11.77**
	(12.66)	(10.53)	(9.83)	(7.11)
% female by industry	.19	.72**	.17	.74**
	(.24)	(.28)	(.22)	(.28)
Size of firm	3.41	3.19*	3.50	3.15*
	(1.92)	(1.75)	(1.95)	(1.67)
Presence of children under 6 years old	.36	.20**	.67	.46**
	(.66)	(.49)	(.78)	(.65)
Total no. of children	1.10	.82**	2.05	1.90
	(1.30)	(1.16)	(1.08)	(1.02)
Marital status	.78	.49**	.96	.65**
	(.33)	(.48)	(.18)	(.48)
Breaks (in minutes per hour)	3.4	3.1	3.5	2.9
	(3.6)	(3.1)	(4.3)	(2.3)
Support	2.89	2.99*	2.89	2.97
	(.66)	(.65)	(.66)	(.65)
Ease of work	1.72	1.71	1.70	1.67
	(.60)	(.59)	(.59)	(.56)
Flexibility	2.39	2.32	2.39	2.30
	(.61)	(.65)	(.60)	(.66)
Maternity leave with pay	...	.29	...	.27
		(.41)		(.40)
Maternity leave	...	.74	...	.73
		(.40)		(.41)
Flexibility and ease (FLEXEASE)	.05	−.08	.00	−.18
	(1.54)	(1.56)	(1.53)	(1.47)

Note.—Numbers in parentheses are SDs.

[a] Females included in the sample were 18–66 years old. [This note is an example and was not a part of the original table.]

* Gender differences significant at $P<.05$.

** Gender differences significant at $P<.01$.

Figure 11.2. *Statistical table.*

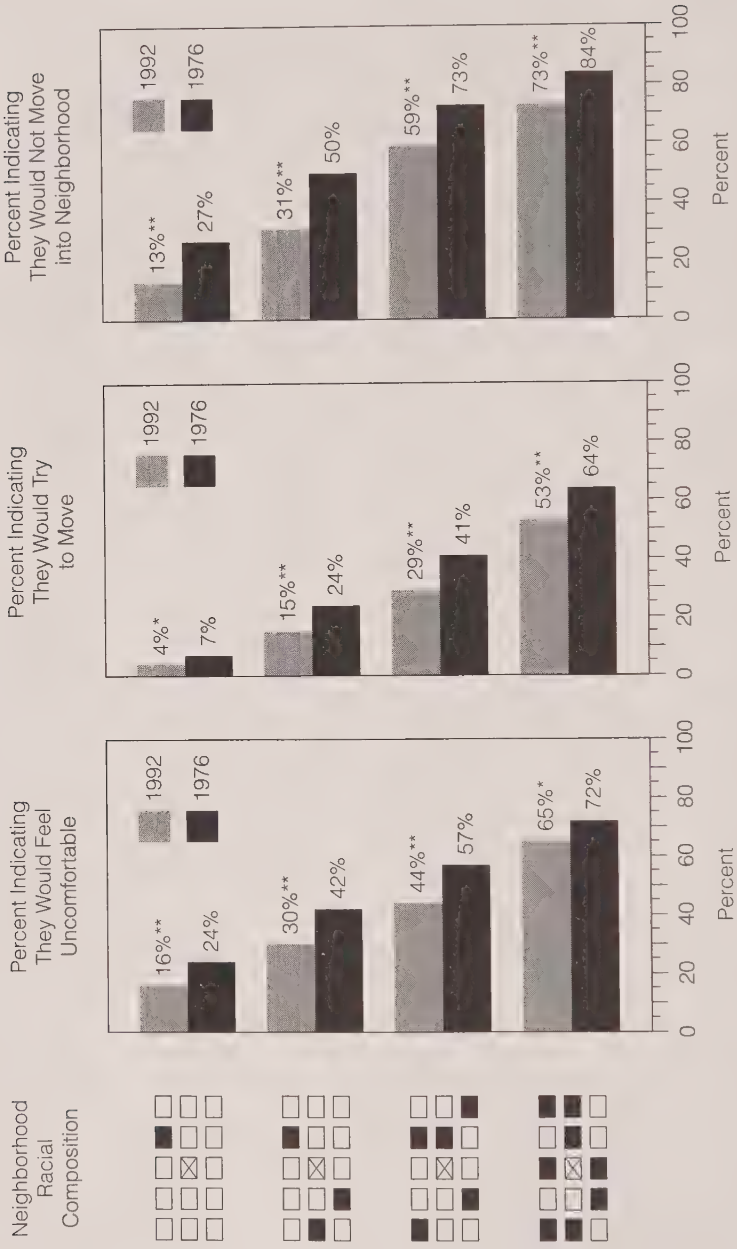


Figure 1. Attractiveness of Neighborhoods of Varying Racial Compositions: White Respondents, Detroit Area, 1976 and 1992
$* p < .05$ $** p < .01$ (two-tailed tests)

FIGURE 11.3. *Bar charts of statistical information.*

You should also remember that there are perils at each turn. Cynthia Crossen, in her book *Tainted Truth: The Manipulation of Fact in America,* illuminates several important truths about our use and understanding of statistics. On one hand, we often, and sometimes outrageously, misuse and mangle statistics. On the other, we have been trained to trust statistics. Consequently, we have developed two opposing knee-jerk responses to statistics: We reverence them as evidence, adapting a "How can you argue with stats?" attitude; but we also suspect them of being devious. When a network news anchor begins a sentence, "Studies show, . . ." we perk up our ears, but we then grow skeptical as we remember all the times we have been misled by poor, or poorly used, statistics.

Further, we make mistakes not only in trusting false statistics but also in distrusting reliable statistics. Crossen tells the story of a Sears store that had overpaid sales tax to the local government. The store conducted a random sampling to estimate the taxes that the city owed it and came up with a figure of $27,000. A judge, however, refused the estimate, insisted on facts rather than a statistical guess, and ordered Sears to review every individual transaction—at a cost of $3,500. That review arrived at a figure of $26,750.22 that the city owed Sears in overpaid tax. In short, the judge demanded an expenditure of $3,500 in order to save the city about $250.

Crossen's goal is not to indict all statistics; rather, she argues that they can be used responsibly and helpfully. But their effective and ethical use depends on their *expert* use; the inexpert judge in the example above went toe to toe with Sears's experts and came out looking badly. Crossen claims, furthermore, that the methods and language used in honest and dishonest statistics appears to be identical. Just as there are good and bad novels, experiments, and first-year composition papers, there are good and bad statistics—powerfully clear and convincing or powerfully deceptive and cynical. And the quality of the statistics depends on you, the writer. Take the stats course!

Exercise 11.1 Analyzing the Use of Statistics

Although you are probably not yet equipped to analyze professional uses of statistics and determine their validity, you can try, as a first step, to find problems in the uses of statistics that we all confront in such places as the daily newspaper.

The following is information I culled from two newspaper articles. The statistics were used to argue apparently contradictory points about the relationship between gender and success in school. Try to determine what, if anything, is flawed about the reasoning in each case.

Remember that errors can occur in methods employed to gather statistics or in the interpretations drawn from them. A social scientist may fail to impose adequate controls or a journalist may leap from a valid set of data to an unreasonable claim about causes and effects. You need to recognize a variety of misuses of statistics.

> One article on the editorial page of a local newspaper argued that we are "cheating our sisters and daughters" in schools all across this country. In support of this conclusion, the author cited studies proving that boys ask 80 percent more "academically related questions" than girls; that 64 percent of high school boys in physics and calculus classes will major in science and engineering, compared to only 19 percent of the girls in those classes; that 39 percent of girls between the ages of nine and nineteen said they were harassed once each day; and that in 45 percent of the reported cases of harassment school administrators did nothing.
>
> On the same page of that newspaper was an article which claimed that the real story is that girls and women have now conquered American education. Again statistics were mustered to support the claims: Women make up 55 percent of college students (up from 41 percent in 1970); women are nearly 50 percent of the enrollment in law schools and medical schools and 59 percent of the enrollment in master's degree programs; eighth-grade girls are twice as likely as eighth-grade boys to hope for a professional or business career; and girls who are high-school seniors are more likely than the boys in their grade to want a college or graduate-school degree.

Kinds of Detail in Qualitative Research

Evolving Traditions Ethnography—which means, literally, to "graph" or "draw" a people—is the most common type of qualitative research. Ethnographers describe cultures—the culture of a small community on some remote island, of an inner-city neighborhood, of a team of biochemists, of a group of students in a classroom. For most of this century the aim of such description was a realistic understanding of the culture being studied, and the method was a rich accumulation of detail that could create a sense of the "real" world of the group in question—in much the same way that a novel creates a world through its detail.

For the past couple decades or so, ethnographers have become more aware of the ways in which their intrusion into a culture to observe it can change what they see. This is Heisenberg's "Uncertainty Principle" applied to social science. Heisenberg was a physicist who proposed that we can never be certain about both where a particle of matter is at any one point in time and how fast it is moving because the act of observing it changes those conditions. The Uncertainty Principle has since been used as a metaphor for describing the more universal inability to observe something without disturbing it. We are again talking about questions of epistemology—what people in a discipline believe is knowable and how it can be known.

If observations of a culture somehow change that culture, then ethnographers have to be especially careful about their methods of observing and of interpreting what they see. What questions they ask, how they ask questions, how they record what they observe: all of these issues complicate the business of ethnography. So, according to a historical study of ethnographies,

> both ethnographers and their readers must possess a high tolerance for unending ambiguity as an aspect of understanding in place of a satisfying explanation of a fixed object of analysis. (Marcus and Cushman 45)

In other words, ethnographers have changed from thinking that their detail could describe what a culture is really like to thinking that their detail allows them to make interesting, but unavoidably subjective, personal interpretations of cultures.

Or have they? Certainly not all ethnographers (or other social scientists conducting qualitative research) are willing to abandon claims to being objective, where *objective* means both reliable (other ethnographers repeating the study would come up with similar findings) and valid (conveying some truth). Jerome Kirk and Marc L. Miller, authors of a book called *Reliability and Validity in Qualitative Research,* recall the example of two ethnographers studying the same culture—on the island of Samoa. One of them discovered that unmarried teenagers were sexually active; the other discovered that they were not. The researcher who said they were sexually active (the now-famous anthropologist, Margaret Mead) was a young woman, and the people she asked about sexual practice (she did not go around peeking in windows) were young Samoan women. The other researcher, D. Freeman, was a man who interviewed the fathers of the teens.

Now some people would find it easy to say that Mead interviewed the more accurate source and that her study is the more valid; others might say that both studies are interesting but neither can claim to be valid. Kirk and Miller, however, argue that both studies may offer valid understanding of different parts of a complex issue. Mead's conclusions about the teens could reveal that they were, in *fact,* sexually active, but Freeman's findings could reveal the *fact* that fathers in that culture valued virginity highly, perhaps as a necessity for making good marriages for their children.

The lesson is that social scientists, whatever their or your epistemology, will judge the quality of the detail you present in terms of your careful, honest explanation of your methods for collecting and interpreting your detail.

Examples of Detail in Qualitative Research The first examples come from a book-length study of how children in an urban school learned to write (I cited this book's statement of purpose earlier in this chapter). Details include two tables that describe, in percentages, the racial makeup of the classroom and the marital status of the families in the community. No statistical data appear; no other numbers of any kind are prominent. A note on one table (classifying ways in which the students participated in class) indicates that the table's purpose is to "illustrate . . . contextualized meaning" (Dyson 76)—*illustrate,* not report numerical measurements. Additionally, the book contains about twenty drawings made by the students. Most of the detail comes in transcripts of conversations. On virtually every page there are fragments of conversations taken from the classroom.

So the text looks a bit like the writing of a literary critic: Passages of conversation (which look as if they might be quotes from a play) are followed by paragraphs in which the author interprets the conversations. Look, for instance, at the beginnings of the three paragraphs that follow a transcription of a scene in the classroom wherein one of the students is telling a story.

> Jameel thus performed a story. . . .
>
> As skillful as it may have been, Jameel's story was not appreciated by his colleagues [his classmates]. . . .
>
> By the end of the winter months, then Jameel's playful, performative use of language helped him to participate in . . . his classroom. (Dyson 139–40)

Another example of qualitative research, a book on the ways language can be used to understand a culture, is Shirley Brice Heath's *Ways With Words: Language, Life, and Work in Communities and Classrooms.* Heath studied two small communities in the South. Her detail includes maps, photographs, tables (which summarize information such as the questions she asked, the songs the people sang, and ways the people used reading and writing in everyday life), and many transcripts of stories and conversations.

Although these kinds of detail—*examples* of what the writers *observed*—are typical in qualitative studies, remember that some qualitative studies do use statistics. Some researchers are developing computer programs, for example, that analyze the data in transcribed conversations. Suppose that a researcher identifies a word or phrase that signals aggressive behavior. A computer could scan masses of conversation for that key word (measuring its frequency, detecting contexts in which it frequently appeared, and so forth) and then could generate statistical descriptions of the data. Greater objectivity might come from such analysis; of course, the researcher would still do the interpretive work of identifying the key language to look for and then making sense of the statistics.

Differences between Kinds of Detail in Qualitative Social Science and in the Humanities Although I have made several comparisons between the details used in qualitative research and the humanities, the character and use of detail in the two fields differs in at least one important way: Qualitative detail is about what is real. Even if you do not believe that such detail can capture and convey reality, its subject is reality, not fiction. No matter how subjectively interpreted or how impossible to measure with mathematical precision, detail in qualitative studies is used in an attempt to understand what is true. Granted, good literature and music and art also help us to understand what is true and real, and reading a novel can indeed change the way we think about the real world. But a teacher who reads a credible qualitative study on how students learn to read is likely to make a change in the way he or she teaches reading. And a government agency may make decisions on social policy based on qualitative social science—and not based on a novel.

In critical interpretation of the arts, therefore, detail may convey the idea that something is just plain interesting; interpreted detail in qualitative social science, however, must have a ring of truth.

Exercise 11.2 Analyzing Quantitative and Qualitative Details in the Social Sciences

In Chapters 5 and 6 we looked at the writing of a graduate student in psychology. Here are two parts of a personality appraisal that she wrote for one of her graduate classes. Its purpose is to evaluate an elementary school student and recommend ways to improve her situation in school; the actual audience was the teacher of the course, but the pretended audience was the child's teachers and parents.

Analyze the appraisal to determine what kinds of details are used. Are they effective for the purpose and audience? Are quantitative and qualitative details combined appropriately? What changes would you recommend and why?

BEHAVIORAL OBSERVATION

Dressed in a pink sweatshirt with rows of lace and frills, Linda sat upright at her desk. Although her fingers were adorned with elaborate rings from her father's store, she took more interest in a plastic "mood" necklace, which she was eager to demonstrate. Linda appeared shy at first, but was not at all reluctant to speak when questioned and prodded. Rapport was easily established after the initial conversation. She spoke freely of her immediate family, their activities of attending popular movies, and her aunt. Linda seemed mild-mannered and compliant during the evaluation. She sat up straight and still in her chair throughout the entire test. Moreover, she was polite and seemed comfortable with the test situation; she expressed enjoyment at being able to do different activities.

Linda demonstrated more perseverance on some subtests than others. On subtests such as Bead Memory, Matrices, and Pattern Analysis, which focus on memory, sequencing, and visual-motor tasks, Linda appeared to be invested, using quiet rehearsal and memory strategies with her mouth and fingers. On these subtests, she took her time, concentrated, and smiled frequently. In contrast, on subtests such as Comprehension, Quantitative, and Absurdities, which focus more on verbal comprehension and knowledge accumulated by experience, Linda seemed uninterested and did not put as much effort into her answers. At times, when she did not seem to know an answer, Linda hesitantly looked up at the examiner to see if the examiner appeared ready to go on to the next item. If she saw the examiner watching her, she quickly brought her eyes back down and put a "thinking hard" expression on her face. She waited out these items and then responded with "I don't know that one."

ASSESSMENT RESULTS

Linda was administered the SB:FE to measure her general intellectual functioning and to determine how she goes about solving problems. Results of the test indicate that Linda is currently functioning at the 92 percentile rank, which is in the superior range.

To evaluate Linda's score, the twelve subtests were grouped together in three categories: (1) verbal comprehension, measuring Linda's verbal knowledge, as obtained through in-school training; (2) nonverbal reasoning/visualization, measuring Linda's concentration, short-term memory, and sequential skills. Results of this factor analysis indicate a significant difference between verbal comprehension and nonverbal reasoning/visualization (15-point difference) and between verbal comprehension and memory (17-point difference). Although Linda performed average or above average on all subtests, she performed

> significantly better on subtests grouped in the nonverbal reasoning/visualization and memory factors than she did on subtests grouped in the verbal comprehension factor.

Amount of Detail

First of all, I cannot give you precise guidelines. It might be convenient if I were able to say, for each of the disciplinary groups, use *x* number of details per *x* number of words. But, as we have already noted, appropriate amounts of detail depend on the kinds and the quality of detail—fewer details are necessary to make your writing clear and convincing if the details are striking and unquestionable. Further, we would find, in analyzing individual sentences, that it is sometimes hard to define just what is and is not a detail. For example, is the hypothetical instruction "use *x* number of details per *x* number of words" a detail?

One other qualification needs to be made before we look at some examples. Beginning writers sometimes believe that the amount of work they put into a writing project ought to correspond to the length of the finished product—the more work, the longer the project. Such thinking is especially wrongheaded with respect to studies in the natural and social sciences. A half-page table may present a summary of weeks, months, or even years of work, as well as hundreds of pages of data. So our discussion of the amount of detail must distinguish between the amount collected and the amount presented.

Basically, the amount of detail collected for a quantitative study should be sufficient to produce statistically significant results (see the earlier discussion of statistical significance). The amount collected for qualitative research should be at least enough to convince you that your insights are accurate, enough to shield you from your biases. In either case the amount presented should be sufficient to produce a clear and convincing case that your findings support your hypotheses.

Amount of Detail in Quantitative Research Suppose that you have been conducting a quantitative study, your data have produced statistics with a 5 percent level of significance, and you are ready to draft your article. You will be using an IMRAD format, and you want to know how much detail to put in the Introduction, Methods, Results, and Discussion sections. Although you will have to consider the type and quality of the details you have available to use, as well as how controversial or complicated your hypotheses are, you can also glean some guidelines from other quantitative studies that have been published.

A sample of six typical quantitative studies in the *American Journal of Sociology*, the *American Journal of Political Science*, and *Psychological Science* (all published between 1992 and 1995) offer some suggestions.

In introductions, authors review background materials, setting their work within the context of previous work. An indication of this kind of grounding appears in the parenthetical citations of previously published studies. These references to specific publications allow a writer to begin an article with details that lend a sense of authority and credibility. The number of citations in the sample articles ranged from five to eleven per three hundred words (an average page length for college papers). They averaged six citations per three hundred words. In short, a professionally detailed Introduction, in a format you are likely to use for your papers, would probably include about six citations per page, or one citation every four lines.

Let me say again that you should not use these numbers as more than a rough guideline. If you are writing about a relatively new, unresearched subject, which social scientists often do, there may be fewer pertinent published sources to cite. The point is simply that when social scientists (including your social science teachers) read your work, they will probably expect a level of detailed background references similar to that which is suggested by the sample of quantitative studies mentioned above.

Methods sections are solid with detail. Their purpose is to describe exactly what you did, how you did it, what subjects you used, and so forth. So, in effect, you compile a story of your experimental method that has enough detail to enable a reader to duplicate it.

A reader can get a sense of how densely detailed a Results section is by seeing the number of graphic summaries of information—which is to say, the number of figures and tables—per page. Again, if we figure a page at three hundred words, our sample articles range from .7 to 2.4 graphics per page. In other words, a reader used to social science writing will expect an average of at least one table or figure on every other page.

In the Discussion section, social scientists do not introduce new details from their studies—all of those get presented in Results. The Discussion gives the writer a chance to interpret the significance of the results, to show how the results do or do not validate the hypotheses, to establish the study in the context of other studies, and to suggest future research. The latter two purposes again call for references to other published work, and though the number of citations per page in our sample Discussions is only about half what it is in the Introductions, the citations still appear at an average of about three per page.

Facts are the lifeblood of the quantitative sciences—natural and social. Social science writing is, therefore, densely packed with detail—the details of both the writer's study and fellow scientists' studies.

Amount of Detail in Qualitative Research Qualitative research in the social sciences, as we have noted repeatedly in this section, is more interpretive than quantitative research. We would therefore expect, as we in fact see, that studies are more often presented in book-length format, giving an author time to flesh out a study that cannot be reduced to a concise set of statistics. That is not to say that qualitative researchers use few details.

A small sample of qualitative articles (from 1993 to 1995 issues of the *Journal of Cross-Cultural Psychology*, the *Journal of Anthropological Research*, and *Nursing Research*) reveals Introductions that employ an average of six citations per three hundred words—the same as our sample of quantitative studies. And the frequency of citations in the Discussion sections is also similar—an average of 2.4 per three hundred words.

The Methods sections seem to be as richly detailed as Methods in quantitative studies, but we know that describing methods in qualitative research can pose hard questions about how much detail to include. Imagine that you are conducting an ethnographic study of a community's language habits, such as Shirley Brice Heath's *Ways With Words: Language, Life, and Work in Communities and Classrooms*, which we discussed earlier. How completely must you describe your methods for selecting and recording the language habits of your subjects? Do you describe what you say to people before and after you record their speech, what kind of clothes you wear (your dress may make you seem an outsider and discourage their openness), what your own language sounds like (which could also identify you as an outsider)? Kirk and Miller rightly point out a major problem with explaining methods in qualitative studies: "detailing the . . . steps in getting the job done looks picky and absurd" (20).

Plentiful details about methods are necessary because your audience must be convinced that your methods are sound. Because the audience does not want to be bored with endless minor details but must believe that your results are reliable, trust enters the equation. And your audience will trust you more if your methods are those generally accepted by the broad community of social scientists. It is no surprise, therefore, to see many citations to others' published techniques in a Methods section; these help to show the audience that you are following standard procedures. One caution: Notions of what is acceptable methodology are constantly changing, so remember one of the most often repeated pieces of advice in this book—*read* in order to keep up with your field's standards.

Results sections often contain tables and figures, sometimes just as many as in a quantitative study. But some qualitative research seeks results that cannot be summarized in a table. The findings in an ethnography, for example, may be transcribed quotations of things that the subjects said. Nonetheless, the amount of that kind of detail in a Results section is high. Two of the sample qualitative articles I have been referring to are ethnographies; the text of their Results sections presents an average of about two long quotations (from 50 to 150 words) per three hundred words. In short, the Results section, whether in quantitative or qualitative research, includes detailed, concrete findings, not impressions or interpretations.

To redraw the point of this section: Only if you understand the purpose of studies in the social sciences, the purpose of individual sections in a study, the quality of your details, and the expectations of your audience, can you gauge how much detail you need.

Exercise 11.3 Analyzing the Amount of Detail in Social Science Writing

Look again at the sample in Exercise 11.2. You have already assessed the effectiveness of the kinds of detail used. Now determine if the amount of detail used is effective. As always, you will need to make those judgments in terms of the purpose and audience of the paper (as described in Exercise 11.2). In what places would you add or delete details and why?

WORKSHOP 13

Detail in the Social Sciences

In this workshop you will consider Marji's questions and choices about detail. If you want to review the assignment for Marji's paper, it can be found in Chapter 2 (page 64). You will also need to use the complete text of Marji's paper, also in Workshop 3, in order to complete this workshop.

MARJI'S QUESTIONS ABOUT DETAIL

You can see from Marji's questions below that she was concerned about kinds of detail (see the first question and the final group of questions) and amount of detail (see the first and second questions and the final group of questions). She also brings up a new issue: how to gather the best detail. This is a question that must be answered in the context of each new writing task, but generally students are used to getting most of their information from journals, books, and class notes. When Marji had to coax information out of a living human subject, she faced a new challenge.

The last question in the final group of questions also recalls the problems Marji had because of her teacher's change to a more qualitative approach to the assignment; that last question is fundamentally a concern about kinds of detail—figures are associated with quantitative research, and Marji wondered how she would integrate them with her qualitative themes. But the figures that she finally used—photocopies of the writing of the student she observed—are exactly the kind of detail that we see in qualitative studies.

- Did I get enough information in my interviews about physical appearance and mannerisms?
- Do I have enough information for each of the categories?
- What questions can I ask of the student that will get me the best information to answer the questions that the assignment posed?
- How will I incorporate the formal academic stuff in my themes?
- I was very uncertain about my figures. How should I refer to them? How many were necessary? How much variety in kinds of figures should I have? How well do the figures fit in with the themes? [This group of questions is also related to matters of format, as we will see in Part 5.]

ANALYSIS OF THE KINDS AND AMOUNT OF DETAIL

Using information from our discussion of detail in the social sciences, analyze the kinds and amount of detail in Marji's report. First, list (with specific references to the parts of the report) the kinds of detail that Marji used. Then, examine how much detail is used in each part; again, report your findings in detail.

Having done that work, think further about the use of detail by comparing it to what Marji could have done. How would her details be different, for example, if she had written a quantitative study, using objective details such as standardized tests or statistical investigations (how many times Dan spoke each day in comparison to other students, or what words he used to convey sadness or happiness)?

REVISION OF THE KINDS AND AMOUNT OF DETAIL

Using your analysis of the kinds and amount of detail in Marji's report, suggest possible revisions. First, suggest general changes in the kinds and amounts of detail used throughout the paper. Next, select a part of the paper (a section of one to two pages) that you think is weak in its use of detail. Explain its weakness(es) and how you would revise. Sometimes you can gain insight on possible revisions by refining the purpose and audience. Remember that the papers reproduced in the workshops all received grades of A or A−, so you probably will not find glaring weaknesses, but you can always find ways to improve.

Questions for You

Having worked with the detail in Marji's paper, do you have any specific questions that you would add to her list or any remaining general or specific questions about the principles of using detail in the social sciences? If so, write them out for your teacher to see.

HUMANITIES

In the "Rhetoric of Literary Criticism," a study that examines the strategies of several representative articles in literary journals, Jeanne Fahnestock and Marie Secor observe that "the quantity and typicality of the evidence were rarely defended" (82), which is to say that the authors of the samples did not spend time justifying the kinds and amounts of detail they used. The samples of literary criticism do not include explanations of "methods" or "results"; they do not subject their evidence to the kinds of tests that social scientists use. In one article, according to Fahnestock and Secor, the examples simply do not "bear the weight of the generalization" (82). In other words, there simply are not enough details to make the broad thesis (regarding loving relationships in the history of the novel) reliable—in any statistically verifiable sense.

In their introduction, Fahnestock and Secor offer confessions about the detail in their own article; in essence they admit that it uses details more typical of the humanities than of the sciences. They say that their study is "not empirical," that there was some "bias" in their selection, and that the "scale of our study is small" (in fact, they do not even say how large their sample is). Are they practicing what they seem to criticize? Are they being naively unself-conscious? I think not. First of all, they are not criticizing writers in the humanities for failing to muster large amounts of evidence and defend its significance. Rather, they are giving us examples of the fact that the humanities operate with both a sense of purpose and a sense of what is knowable that are quite different from those in other disciplines; consequently, the kinds and amounts of details used differ as well.

Kinds of Detail

I have, through the first three parts of this book, argued that the fundamental purpose of the interpretive studies typically written in the humanities is enrichment. Writers thus enjoy the complexity and ambiguity of their subject matter. Of course they want their readers to find their theses convincing, but sometimes it seems as important to enhance and illuminate as to convince (though the two goals are usually achieved together). They never seek scientific certainty.

In addition to choosing details that accomplish the purpose of writing in the humanities, writers choose details that are appropriate to the subjects they choose. This seems too obvious to need saying, but writers do sometimes need reminders of the obvious. I once had a student who wrote a research paper on *netsuke;* these are small, carved figurines, a Japanese art form. Our class read through the draft, we looked at each other and then at the author, and we asked, almost in unison, "Why aren't there any pictures?" The author had somehow been led to believe that you could not use pictures in an English class. But her subject—a visual art form—demanded pictures as examples. If you write about visual art, you will include photocopies of art; if you write about literature, you will quote the literature; if you write about music, you will include musical scores. That much is simple.

The Relationship between Kinds of Detail and Critical Perspective

How, then, do writers in the humanities decide what kinds of details to use? The first criterion is a writer's belief about what is knowable and worth knowing. In the section on detail in the social sciences we talked about different kinds of detail in quantitative and qualitative studies, explaining that the difference, at least partially, arises because quantitative and qualitative researchers have differing beliefs about the kinds of things that can be known. Writers in the humanities call such varying sets of beliefs *critical theories.*

Two kinds of literary criticism will illustrate. Someone who practices New Criticism (which was very popular for most of this century) focuses on the literary text, not, for example, on the author's life, the cultural experiences that influence readers, or the political trends at the time a book was written. So New Critics use examples from the literature they write about—quotations, images, repeated structures, and so on. A current critical school is called New Historicism. Its practitioners focus on a text's complex relationship to the culture in which it was written, to such things as historical events and political movements. A New Historicist will therefore use historical details alongside literary details.

Examples, Facts, and Experts Keeping in mind the ways in which critical theories influence and complicate our understanding of the kinds of details used in the humanities, let me now simplify our approach. Most details in the humanities can be broadly classified in one of three categories: examples, facts about the subject, or ideas of experts.

Quotations (or paraphrases and summaries) from Victorian novels, paintings from the Dutch School, and musical scores from 1930s jazz bands are all examples that critics of literature, art, or music might muster to support their theses.

The number of lines in a poem, the type of material used in a statue, or the harmonic structure of a song are facts about those artistic subjects.

The opinions, interpretations, definitions, and theories that writers take from published sources are what I am calling ideas of experts. Just as scientists include background from other scientists' work, a critic in the humanities will read and cite others who have written on a subject and whose writing may offer a foundational theory or definition.

Generally, examples and facts are primary materials and experts' ideas are secondary materials.

Examples of Details in the Humanities Donald Johns's article "*Funnel* Tonality in American Popular Music, ca. 1900–1970" utilizes all three of the kinds of details discussed above. The article is about the way much popular American music follows an unusual pattern of chords. In a song written with "funnel tonality," the dominant key (the key that the song is written in) emerges only after a series of unexpected key changes that leave musicians and listeners uncertain about what the dominant, or tonic, key is (you do not, by the way, need to understand the musical theory to get the point about details here).

Johns uses examples throughout the written text of the article, naming songs that exemplify his point and signaling these with explicit clues such as: "for example," "a classic example," "as a model of," "one eminently successful example," "such is the case in," "a number of instances," and "such as."

After presenting a song to exemplify a point, Johns often provides the factual details that describe the way in which the song uses funnel tonality. The third paragraph demonstrates this strategy. The opening sentence draws a contrast between the tonic fixation (the opposite of funnel tonality) of the old song "There'll Be a Hot Time in the Old Town Tonight" and the tonic structure of "a group of songs that includes 'There'll Be Some Changes Made.'" Then the facts about "There'll Be Some Changes Made" take center stage:

> Tunes such as "Changes" cycle through a series of borrowed dominants until they come to an important arrival point, usually after sixteen measures. Here, the important arrival point is an F7 chord, the dominant of B-flat. The tune then proceeds to repeat the cycling process . . . and then finally . . . arrives at the *only* tonic chord in the piece. (459)

The factual detail of the paragraph, coming early in the essay, enhances our trust in Johns's knowledge, it sets a pattern for how he will prove his point, and it defines the musical pattern that he, two paragraphs later, names funnel tonality.

Because the purpose of the article is to explain and name a pattern that Johns has discovered, the ideas of experts are not as necessary as they are in a piece that is more grounded in previous studies. Still, three quotations from experts are used, primarily, to verify the significance of the subject.

Another article about music, "Solo and Cycle in African-American Jazz," by Thomas Brothers, argues the point that fusion theory (the theory that jazz resulted from a combination of African rhythm and European harmony) must be modified. It offers instead a case that "jazz represents the incorporation of European models into an African mold" (480).

Given the theoretical purpose of Brothers's article, his strategy for using examples differs predictably from that of Johns. Instead of naming many different songs to prove a trend, Brothers focuses on a small number of jazz compositions, examining them closely in order to demonstrate African and European influences on jazz.

An example of a single jazz piece may, then, be followed by several paragraphs that go into facts about the piece. At one point Brothers identifies Louis Armstrong as a central figure in jazz history; he then focuses on the Armstrong piece titled "Big Butter and Egg Man." The second paragraph on this piece runs to over three hundred words. It begins by making the interpretative statement "A more daring gesture occurs at the end of the phrase" and continues,

> Instead of a fourth version of the ascending triad, the line leaps suddenly to a high F, followed by a descending arpeggiation of the tonic harmony. (490)

The specific analysis of the facts of the piece is accompanied by a graphic reproduction of part of the song's score.

Because the focus is theoretical, Brothers uses much more detail from experts than does Johns in his essay on funnel tonality. Brothers's main point is based on the ideas of another music theoretician, who is quoted in the second paragraph, most of the introductory section is grounded in the ideas of experts, and other expert opinions are sounded throughout the article.

Complications in Choosing and Presenting Details Choosing details well is predictably complex. Let's discuss several issues that may give you problems even after you have determined what types of detail you should use.

1. Because you must always choose details that will clarify and convince an audience, what adjustments should you make when your teacher is your audience? Some students mistakenly think that because their teacher already knows the details they do not need to include them. Instead of assuming that your teacher will fill in the blanks you leave, write to your teacher as a representative of a larger audience—a group of literary or music critics, for example—that is genuinely interested in what you have to say. In the humanities it is especially important not to leave out detail that you think your teacher already knows; part of the joy of studying works of literature, art, music, philosophy, and so on is in the details. When you hear that a friend of yours has seen a movie or read a book that you like, you get together and have one of those "remember when" conversations ("Remember when Pacino says . . . ?"), in which you talk about your favorite *details.* Your teachers in the humanities study books, movies, songs, and paintings because they, too, enjoy the details: Don't deprive them of their fun.

2. You will also need to choose details in light of the relationship between the audience and the subject matter. An audience that has always interpreted a painting in one way will need a lot of convincing evidence before they change their minds; however, an audience that already agrees with your thesis and for whom you hope only to expand the implications of that thesis will appreciate more enriching details. A simpler way to state this point: Select details in the contexts of your audience and purpose.

3. One of the more difficult questions that an audience makes you confront is how you determine the quality of your details. As we move into the "Amount of Detail" section that follows, you will need to remember that a simple formula (for example, use three supporting details for every point) cannot work. One good example will work better than a dozen bad ones. So how do you distinguish between good and bad detail in the humanities?

To determine the quality of examples, you should determine how *representative* they are. In other words, do they accurately represent that which is typical of the work you are writing about, or do your examples seem to contradict examples found elsewhere in the work? Are there other factors that lend weight to your examples? For instance, does the author of a novel somehow signal the importance of the example you want to use, perhaps by placing it at the end of a climactic scene? Part of your job in presenting examples is to convince your audience that the examples you choose are important.

The quality of what I have been calling the facts about a work depends on how well you combine your expertise in handling the facts and your reason for using the facts. Consider the second paragraph from the student essay used for Exercise 8.5.

> The thrice repeated and stressed "Break" of the first and last stanzas rhythmically dominates the poem, slowing the pace and sharpening the emotional message. In the other 14 lines, lilting anapests and iambs predominate, mimicking the continual rise and fall of waves. By my count, all but 11 of the poem's 110 words are of one syllable, and most of these 11 are trochaic rhythm breakers (e.g., "utter," "vanished," "never"). By continually disrupting anapests with trochees, the poem's very structure resolves the tension between a soothing meter and a disconsolate message. Consider, for example, the poem's last two lines: the trochaic "tender" leading to the stressed "grace" is followed by two perfect anapests. And in the final line an amphibrachic foot stressing "never" leads to the two concluding iambs. "Never" perhaps best encapsulates the poem's message, and the meter emphasizes it masterfully.

The author musters the facts about Tennyson's meter with deft expertise, but the opening sentence of the paragraph does not tell us what its point is, and the sentence that does try to articulate the point ("By continually disrupting anapests with trochees, the poem's very structure resolves the tension between a soothing meter and a disconsolate message") leaves me unclear about how a "disrupting" pattern can "resolve" a tension. Consequently, some potentially high-quality facts may appear to be more show than substance—even if they are, in fact, substantial.

As regards experts' ideas, you can look to book reviews to tell you how well-received your source is among professionals in the field. Reference works such as *Book Review Digest* will summarize reviews of a source and direct you to the originals. You can also ask your teacher about the reputation of a source you plan to use. By the time you are a professional in your field, you will have read enough to know who the highly respected voices are.

4. One final complication troubles most apprentice writers and even some experts. How can you present examples from a novel, symphony, painting, or other work of art without summarizing pointlessly? You may have had a teacher tell you at some point to "avoid plot summary." Good advice, but how can you follow it? Let's say that you are writing about a short story. If your point is to show patterns in the plot, you have to summarize the plot. Still, the key is to keep your readers' attention focused on your *point* and not let yourself, and therefore the audience, get lost in retelling

the story without a purpose in mind. Your reader should never have to stop and wonder why you are summarizing. So use the beginnings and endings of your paragraphs (and do not let your paragraphs run on too long) to state your point rather than to simply continue the story without explaining why you are doing so.

Exercise 11.4 Analyzing Kinds of Detail in Student Writing in the Humanities

In the following essay, do you find all three of the major types of detail discussed in the preceding section: examples, facts, and expert ideas? Which of the three types is used most often? Are there places in the paper where one type is used more than the others? What are the most effective uses of detail? The least effective? What revisions in the kinds of detail used would you recommend? Make all your answers as specific as possible. Paragraphs are numbered so you may refer to them easily.

> American novelist Bernard Malamud asserts that in living our lives we are continually "guessing what reality is." Because of the complexity and mystery of each human being, he suggests that we can never know the *whole* truth about ourselves or anyone else. Thus, he sees literature as a fundamental way in which we experience others' quests to see and know themselves and in so doing broaden our own capacity to make moral choices (Malamud 87). In his novel *The Assistant,* Malamud uses the entrance of an outsider into the Jewish world to explore the themes of imprisonment and freedom, and redemption through love and suffering, depicting a desperate world in which one cannot escape pain, and yet a universe not bereft of hope. 1
>
> The reality which Malamud offers us in *The Assistant* finds its structure in the bleak world of a grocery store and is related through the eyes of four individuals. The Jewish grocer, Morris Bober, has slaved away in this store for twenty-one years, barely making enough money to survive, watching his daughter Helen pour all of her earnings into his meager business. Continuously nagged by his wife, Ida, he dreams of selling his shop and discovering a better life. The twenty-three year old idealist, Helen, reads Dostoyevsky and Shakespeare and dreams of having enough money to go to college, of freeing herself from this heritage of poverty, and of someday discovering a "future in love" (14).
>
> This little Jewish circle is abruptly interrupted by another dreamer, an Italian named Frank Alpine, who helps in robbing the grocery and then returns to work at the scene of his crime, as his own secret way of doing penance. Desiring to experience the Jewish way of life that he detests, Frank begins to improve the business and at the same time falls in love with Helen. Yet he apparently cannot completely forsake his old way of life: he continually steals small amounts of money from the reg-

ister, and after winning Helen's affections and rescuing her from a rapist, he forces himself upon her, causing her to relinquish all the trust she had placed in him.

Feeling compelled against his instincts to let Frank go, Morris sinks further into disillusionment until his enemy from across the street finally offers to purchase the store at a reasonable price. Ironically, on the brink of realizing the fulfillment of one of his lifelong goals, the persistently unfortunate Morris dies, believing his life to be in vain, an assessment seconded by his wife and daughter. His death, however, allows Frank Alpine to become a grocer in that same shop and to support Bober's family. In the last few lines of the novel, we learn that Frank decides to undergo circumcision and becomes a Jew. He has chosen to stay within the strict confines of Morris Bober's life.

5 The fact that the story takes place almost solely within the limited walls of the grocery store becomes a metaphor for one of Malamud's principal themes, the paradoxical relationship between imprisonment and freedom. Malamud once remarked that "necessity is the primary prison, although the bars are not visible to all" (Field 40). Morris Bober is more than aware of his prison, continuously watching his life waste away through the bars of his own poverty, seemingly unable to break free from the weight of his misery. Yet in a way in which he is not even aware, Morris possesses a kind of freedom which Frank Alpine hankers after and cannot understand. Alpine's own confinement manifests itself in his inability to do those things which he knows are right, thus continually turning the good in his life into bad, forcing him to live "in his prison in a climate of regret" (192). He both marvels over and resents Bober's unflagging honesty and commitment to others: although these virtues have never brought the grocer any sort of reward, they have allowed him to have an intimacy with other human beings which Alpine can never achieve. Malamud describes, "[Alpine] could see out, but nobody could see in," suggesting his isolation from humanity (187).

These ideas about the nature of freedom are explored within another major theme of *The Assistant,* the quest for love and redemption, primarily focused on the relationship between Alpine and Helen. At the outset of their romance, both young people view love as a sort of negotiation. Helen sees in Frank a way to fulfill all of her life goals. She imagines him taking college courses, meeting all sorts of new people, even changing his physical appearance, and herself reaping the benefits of his transformation; in return for this dream, she is willing to reject her Jewishness and marry a Gentile. Frank, on the other hand, gives Helen elaborate gifts, reads all the books she wants him to, and thus believes that she should sleep with him. In a sense, Helen recognizes this unspoken proposal, for she feels that "a gift is a claim and she wanted none on her" (121). Through the course of the novel, both come to understand that love is in a sense a claim which requires a commitment that, freely given, binds two people to one another, a claim which asks not for negotiations but for sacrifices. In becoming a Jew, Frank finds a way to give Helen "something she couldn't give back" and also makes a sacrifice she had never asked of him (237). Helen, in turn, will probably live the life she always detested, that of a grocer's wife. Thus, both discover the freedom to love unconditionally and in doing so accept a sort of confinement within their obligations to one another.

Redemption comes to these world-weary individuals not only through love but also through suffering, that quality which Malamud uses to define the life of the Jew. Frank Alpine once observes in a mixture of admiration and disgust, "That's what they live for . . . to suffer" (88). Throughout *The Assistant*, Morris Bober struggles with this essential element of his life, with this heritage which has been passed on from generation to generation and which he too will bequeath to Helen. Perhaps his inner conflict manifests itself most vividly in the fantastical *macher* who comes to tempt Morris to burn his business down and collect insurance. Although Bober never surrenders, one can feel that he is haunted by the almost taunt, "God loves the poor people, but he helps the rich" (211). Yet Bober remains faithful to his inner creed, which involves taking on the burdens of others' lives as well as enduring the hardships in his own. Morris opens the store at 6:00 every morning in order to allow a Polish woman to buy a three-cent roll, and he dies in the process of shoveling snow in order that people may walk on the sidewalk.

Although Malamud uses suffering in his discussion of what it means to be a Jew, he extends this description to fit all humans, thus illustrating his technique of using the Jew as a metaphor for humanity. Bober tells Alpine, "I suffer for you," but when Alpine questions him again, Bober reverses this statement to "you suffer for me," including even this Gentile into the circle of sorrow. Again, as Frank stands at Bober's funeral, he observes, "Suffering is like a piece of goods. I bet the Jews could make a suit of clothes of it. The other funny thing is that there are more of them around than anybody knows about" (231). Explicitly, he is talking about the Jews, but perhaps he is also suggesting that there are more sufferers than anyone realizes. Thus, we find in the Jews not only a metaphor for humanity's dilemma but also a sort of response to the predicament. As Morris tells Frank, within suffering one has a choice to suffer for nothing or to suffer for "the Law," a law which offers not rituals but a spirit of dedication. Although (as Morris once observes) luck is a gift, it is not a right; yet with discipline and love, the capacity to endure through suffering is a gift made available to everyone.

Morris' final evaluation of his own life claims that he gave it away for nothing, and even Helen believes that "with a little more courage he could have been more than he was" (230). Interestingly enough, his is the very life which this outsider, Frank Alpine, chooses, bringing a sort of completion to Bober's own existence. Bober continually dreams about his son (aptly named Ephraim) who had died at a very young age and who comes to embody all of Morris's own unfulfilled visions for his life. By becoming a sort of son to Bober, Frank fulfills one of the old grocer's biggest dreams in using his work in the store to put Helen through college. And although Frank remains within the physical prison of the grocery store, at the end of the book he imagines St. Francis (that man who loved poverty "like she was a beautiful woman") dancing in the woods, surrounded by birds, one of Malamud's symbols of freedom. Although Morris never had the courage to invent his own freedom, he has somehow given Frank enough imagination to create a freedom within the prison and to discover a ray of hope which Bober himself never saw. Even Frank's circumcision is an affirmation of that identity with which Bober struggled.

10 Novelist Isabel Allende writes in her book *The House of the Spirits* that "memory is fragile and the space of a single life is brief, passing so quickly that we never get a chance to see the relationship between events: we cannot gauge the consequences of our acts" (332). In offering us a world of illusion in which to gain truth, Malamud allows us a glimpse into something we rarely experience in the immediate context of our own reality. He enables us "to watch the watcher," to see how Bober's life flows into and finds a sort of hope in Alpine's that it never breathed in its isolation.

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Amount of Detail

The amount of detail is, as is every other facet of writing, connected to purpose and audience. The article on funnel tonality proposes to show, to an audience of music experts, a trend in popular music, so it must offer many examples of popular songs. Though the article is short (only ten pages without the appendices and endnotes), it parades twenty-two different songs as examples in the text and lists an additional forty-one songs in an appendix. The purpose of "Solo and Cycle" is to theorize about influences of African music on jazz—for an expert audience. It therefore requires fewer different examples of musical pieces and more factually detailed examinations of each example—to support and define its theory and to argue against opposing theories. It relies on examples of music from five groups or individuals: the Ewe people in Africa, three major jazz artists in America, and a group of musicians in the 1940s who were influenced by those three major artists. In other words, a writer cannot separate choices of purpose and audience from choices of kind and amount.

What is consistent about every piece of professional writing and most successful student writing is that a large percentage of the total space of a piece of writing is given to detail. Because writers in the humanities generally use fewer graphic details—tables and figures—than do scientists and businesspeople, we may have to look closely to see the extensive detail, but it is always there. The paragraph that I quoted earlier, from the student essay on Tennyson's "Break, break, break," may not appear full of detail, but the primary purpose of all but two of the ten main clauses is to present supporting detail.

The examples from music criticism utilize details both in the written text and in graphics—musical scores and charts of things such as "harmonic design." The funnel tonality article allots slightly less than one-tenth of its space to introductory and concluding generalizations, a little more than a third is occupied by graphically presented detail, and more than half is regular text devoted to detail. In "Solo and Cycle," the introductory and concluding discussion of theory takes up almost a fourth of the article, graphics fill another fourth, and details in the regular text round out the remaining half.

In calculating those rough proportions, I looked at the main purpose of paragraphs and major sections. Generalization and detail work together in every paragraph—in introductory theorizing paragraphs as well as the example-wielding paragraphs of the body. But in order to obtain a sense of how space for detail is shared with space for generalization, we must think about the purpose of major units.

To study major units, we look at the purpose of individual paragraphs; similarly, to study paragraphs, we look at the purpose of individual sentences. When we do that, we see that the proportion of sentences within a paragraph that are dedicated to providing detail is similar to the proportion of paragraphs focusing on detail within a major section. We noted that only one-fifth of the Tennyson paragraph functions to present generalization, the remaining four-fifths presenting detail. Now look at a paragraph from "Solo and Cycle." It appears in a section that functions primarily as an example of African musical influence (I've numbered the sentences for easier reference):

> **[1]** A fundamental feature of southern Ewe music is the division of the ensemble into two groups, a fixed rhythmic group and a variable rhythmic group. **[2]** The ensemble in Example 1 [a 1 1/2- page score] is very traditional: the fixed group is made up of the *gankogui* (a bell), the *axatase* (a gourd rattle), clapping, and the *kagan* (a small drum); the variable group is made up of the middle-sized drums, the *kidi* and *sogo*, and the largest drum, the *atsimevu*, played by the master drummer. **[3]** The ostinato [a constantly repeated short melody] carried by the gankogui provides the foundation of the typical southern Ewe orchestra. **[4]** The other members of the fixed group are placed with the gankogui because they are also limited to ostinato material. **[5]** The middle-sized drums may have varied material, and the atsimevu has the most varied material of all. **[6]** Hewitt Panteleoni observes that this standard format reverses the relationship between rhythmic ordering and vibrational frequency of instruments expected by a listener familiar with European music: [the rest of the paragraph is a four-sentence quotation from Panteleoni].

The first sentence makes the main point: The purpose of the paragraph is to explain the nature of the two groups, and it does so in order to move the whole paper along toward seeing how these African musical practices eventually influenced jazz. But even that first sentence begins to elaborate the factual detail as it identifies the “fixed” and “variable” rhythmic groups. The second through fifth sentences carry factual detail. Sentence six (which stretches to include the four sentences of the quotation) concludes the paragraph by using an expert’s ideas to connect particulars about Ewe music to a larger theoretical point. The effect is that even the theoretical generalization is enlisted as a supporting detail by virtue of its being voiced by an expert, so almost the whole paragraph is devoted to detail.

These examples cannot tell you how many examples to use for each point you make or how to divvy up your sentences and paragraphs between generalization and detail. The point is this: Do not believe that writing in the humanities is less detailed than writing in any other disciplines. Although the topics in the humanities may often be more abstract than those in the sciences or business, even abstract points must be clarified, supported, and made interesting with detail.

Exercise 11.5 Analyzing the Amount of Detail in Professional Writing in the Humanities

Here are the first two paragraphs of support for the first major point of a professional piece of literary criticism. Count the number of details and roughly calculate the proportion of detail to generalization. Does the number seem sufficient? How do you make that judgment? Would you add or subtract any details if you were revising this essay and why?

Now answer these same questions about paragraphs two and three of the student essay in Exercise 11.4. Compare these two samples, of roughly the same length and purpose, written by a professional and a student. What similarities and differences in the amount of detail do you notice?

> Matrimonial misery was a theme that appeared very early in George Eliot's work. Its emergence in one of the first pieces of fiction that she published, "Janet's Repentance" from *Scenes of Clerical Life*, indicates the extent to which a more subtle and disturbing representation of this issue develops in her work as a whole—one that focuses increased attention on the way a marriage can appear to be outwardly "healthy" while actually being internally "pathological."
>
> *Scenes of Clerical Life* was published in January 1858, the first month that the new Divorce Court sat, and "Janet's Repentance" offers a straightforward representation of matrimonial cruelty based on physical violence. In representing Janet's husband, Dempster, as "the drunken tyrant of a dreary midnight home" (233–34), Eliot employs images of torture and sadism that will later be used with greater subtlety in her depiction of Henleigh Grandcourt in *Daniel Deronda*. When Dempster arrives home drunk and calls out to his wife, his "loud jarring voice seemed to strike her like a hurled weapon" (274). It is Dempster's hand, however, rather than his voice that is seen to be the agent of violence. The revelation that "he had no pity on her tender flesh; he could strike the soft neck he had once asked to kiss" (268) is different from that made in George Eliot's last novel, *Daniel Deronda*, where the actual kiss on the neck is seen to be the act that sends shivers down the woman's spine (Dowling 324).

WORKSHOP 14

Detail in the Humanities

In this workshop you will consider Colleen's questions and choices about detail. If you want to review the assignment for Colleen's paper, it can be found in Chapter 2 (page 23). You will also need to study the complete text of Colleen's paper, in Workshop 1, in order to complete this workshop.

COLLEEN'S QUESTIONS ABOUT DETAIL

Colleen was, once again, very brief in her journal questions about detail. One thing that we notice if we read between the lines of her comment is the relationship between topic choice and the selection of detail. Because Colleen chose a narrow topic, she could use all the pertinent detail that she found rather than selecting among possibilities. That did leave her with an imbalance between the various scenes she wrote about—because one scene was more closely related to her topic than the others, she spent most of her time discussing the details in that scene. Her detail was nonetheless sufficient to win her an A.

- For this teacher I wanted to give a lot of detail—quotes, etc. I never left out anything for length reasons—and I used all my support (I didn't have an overabundance, anyway).

ANALYSIS OF THE KINDS AND AMOUNT OF DETAIL

Using information from our discussion of detail in the humanities, analyze the kinds and amount of detail in Colleen's report. First, list (with references to specific paragraphs of the report) the kinds of detail that Colleen used. Then, examine how much detail is used in each part; again, report your findings in detail.

Having done that work, think further about the use of detail by comparing it to what Colleen could have done. If she had chosen to stay with her first idea for a focus (see Workshop 1), how might her use of details been different from what you see in her final draft?

REVISION OF THE KINDS AND AMOUNT OF DETAIL

Using your analysis of the kinds and amount of detail, suggest possible revisions. First, suggest general changes in the kinds and amounts of detail used throughout the paper. Next, select a part of the paper (a section of one to two pages) that you think is weak in its use of detail. Explain its weakness(es) and how you would revise. Sometimes you can gain insight on possible revisions by refining the purpose and audience. Remember that the papers reproduced in the workshops all received grades of A or A−, so you probably will not find glaring weaknesses, but you can always find ways to improve.

Questions for You

Having worked with the detail in Colleen's paper, do you have any specific questions that you would add to her list or any remaining general or specific questions about the principles of using detail in the humanities? If so, write them out for your teacher to see.

NATURAL SCIENCES

Much of the material from the section on detail in the social sciences also applies here. In the natural sciences there is probably more uniformity in the use of detail than in the social sciences. The natural sciences use quantitative, statistical information, applying the same tests of statistical validity as in the social sciences.

Kinds of Detail

Scientific Facts In Part 1 I said that the purpose of science is to accumulate knowledge about things in nature. That knowledge is factual rather than abstract. The four main topics of scientific study—classifying, explaining composition and behavior, discovering origins, and understanding function—help us to recognize the emphatic concreteness of scientists' interests. The end result even of abstract thinking such as that practiced by theoretical physicists—Einstein, for instance—is concrete knowledge of energy, atoms, and other objects and phenomena in nature.

We need, however, to make careful distinctions between concrete and factual detail because they are not synonyms in science writing. To say that a group of scientists collected a set of data or of detailed observations is not to say that they collected facts. If a scientist reads a thermometer and records a measurement of 112° C, he or she has recorded a detail, a concrete observation, but it is not necessarily a fact. If you think back to the discussion of statistics earlier in this chapter, you will recall that a number of measurements would have to be taken in order to reach the assurance of statistically significant measurements, reliable and valid enough to be called facts. So a fact in science is something that can be asserted without qualification and without reference to the scientists who discovered or explained it; it simply is.

But the nature of scientific fact is even more complex than the preceding paragraph lets on. The famous geneticist R. C. Lewontin writes, "Most natural scientists . . . believe that the gathering of facts . . . is the primary enterprise of science" (141). But he goes on to explain that observations which do not support an accepted theory can be ignored and excluded from the body of scientific fact. Each science has what Lewontin calls a "rubbish heap" of observations that result from some combination of chance or just bad science, but

> every science also has a repertoire of coherent observations that have neither been refuted nor explained, but simply cannot be related in any way to the current theoretical structure of the science. (148)

Lewontin offers the example of genetics, in which observations that question accepted theories "have simply disappeared from view" and have "ceased to be evidence" (150).

In short, a scientific fact may be said to be a finding that helps to explain and validate an accepted theory. If that is the case, you, as an apprentice science writer, should know that the business of gathering facts and using them as detail in your writing has to be understood in the larger context of science and its evolving set of accepted hypotheses, or theories. Data that challenge accepted belief must be more abundant, more cautiously presented, and less subject to doubtful questioning about methods or interpretation than data that fit what everyone already believes.

Although most scientists would probably concede the truth of Lewontin's argument, they go about their daily business with a bred-in-the-bone belief that their job is simply to discover and communicate facts. A sociologist who was studying a group of scientists told them that he was confused about the content of their research papers; they responded by saying he was confused because he paid too much attention to the papers. They insisted that he look beyond the papers to their "true meaning": the findings, the facts (Latour and Woolgar 75).

Scientists resolutely focus on their findings because they believe that the overall process of science will eventually validate any "true" findings as scientific fact. Two sociologists recorded interviews with natural scientists and discovered that the scientists relied on a "truth will win out device." For example, one scientist talked about the role of intuition in science and the ways in which individuals' charisma can affect how seriously they are taken by other scientists. Yet he concluded, "I think science is so structured that none of those things are important and that what is important is scientific facts themselves, what comes out at the end." In another interview a scientist admitted to some subjectivity in science; however, when asked how this "personal element gets eliminated," he said that the scientific community gets involved in following up interesting findings and that "experimental evidence . . . at the end of the day solves everything" (Gilbert and Mulkay 93–96). At that point the scientists and interviewer shared a laugh at the scientist's good-guy-rides-off-into-the-sunset tone, but the conversation nonetheless revealed his belief that the truth will win out in the end.

This belief may help to explain why data in the natural sciences are less explicitly tied to hypotheses than they are in the social sciences. The *Publi-*

cation Manual of the American Psychological Association, which is the guide for social scientists, states that the Introduction should include a "formal statement of your hypotheses." Most social science articles follow this advice, labeling hypotheses (Hypothesis 1, Hypothesis 2, etc.), setting them off from the rest of the text like a block quotation and even highlighting them in boldface.

In natural science articles, formal statements of hypotheses are very rare. The Council of Biological Editors advises including either the hypothesis or a definition of the problem. Focusing on the problem seems to be the common option; hypotheses are often only implicit. In fact, Robert A. Day's widely used *How to Write and Publish a Scientific Paper* does not even mention hypotheses in the chapter on writing Introductions.

Here, then, is a paradox: Findings acquire status as facts only when they support accepted hypotheses, yet the findings are not explicitly married to the hypotheses. However, by muting hypotheses and thus making them appear subordinate to findings, scientists are not practicing some kind of intentional con game. Their belief system induces them to present their findings without openly trying to put them into service for any theory. Scientists really do believe that the facts are the important thing and that the truth the facts carry "will win out" in the end.

We also witness the preference for factual details when we compare the ways of integrating background sources in the natural sciences and the humanities. Critics, philosophers, and other humanists cite information from sources, and they frequently quote these sources; they record and amplify the sound of authoritative human voices. Natural scientists rarely quote one another; facts are supposed to exist independently of humans who discover and discuss them.

People who live in the Arctic have many words for snow; people who live in the desert have many words for heat. Scientists live in the world of facts; they employ different words and nuanced meanings for fact, but the main point for us to recognize is that their writing lives in the facts.

Appropriate and Up-to-Date Detail Scientists utilize a wide variety of kinds of detail: photographs from an electron microscope, diagrams of lines of force, drawings of anatomical structures, mathematical formulae, statistically analyzed results of chemical assays, descriptions of color variations in a species, and on and on. Scientists, in other words, find the kind of detail that will most clearly and convincingly answer the questions they pose.

In Chapter 2 we looked at a list of the four primary activities of science: classifying, explaining composition and behavior, discovering origins, and understanding functions. When practicing any one of those activities, a scientist will, of course, use detail that is appropriate to the activity. But it is also true that new knowledge and technology changes what are considered appropriate details. Take the activity of classifying, for example. In the nineteenth century, living things were classified into families and species according to descriptive detail: observations of habits, anatomy, color patterns, and so on. When microscopes became sufficiently advanced, scientists could take cell samples and count the numbers of chromosomes to help them identify species. Now DNA analyses can give even more precise information about an organism's genetic history and therefore more precisely classify it. So the kinds of details that now appear in studies of classification—genetic information in addition to physical description—differ from what was standard in such studies not long ago.

Quantifiable and Objective Detail Whatever the type of detail used, it should be quantified—expressed in numerical values. And the numbers should be as objective as possible. Imagine that you wanted to study taste responses. You could ask people to taste a substance and describe it, but a list of various descriptive terms would not be objective, precise, or scientific. You might do better to give the experimental group a set of criteria and a set of standards. You could, for instance, ask people to taste three different salt solutions, identified by the amount of salt in each. Then they could taste a sample substance and tell you which of the salt solutions the sample most closely resembled. You would average their responses and collect results that you could express in numbers. But you would still be relying on subjective guesses by your experimental group.

Your next step might be to set up an experimental apparatus, like the one used to study taste responses in trout (see Chapter 8). Electrical sensors were attached directly to a nerve that carries signals from taste cells to the brain, and precise measurements were made of responses to exact amounts of various substances. In this case your results would be both quantifiable and objective.

Kinds of Detail in Each Section of a Research Report In the discussion about sections of IMRAD-format research reports in Chapter 8, I mentioned some basics about the content of each section—and thus implicitly about kinds of details—in order to say how that content is organized. Here we will further consider the kinds of details used in each of the four main sections. (I exclude the Abstract, because that summarizes each of the main sections and, to the limited extent that it has space for detail, provides the kinds of detail that appear in all four sections.)

Introduction In Chapter 8 we characterized the scientific report format as being a story. You may remember the scientist who called his report "a beautiful story." The kind of details that the first part of a scientific story requires are background information—the specific ideas and findings that make up the foundation for the story. So a typical Introduction follows a scheme something like the following logical skeleton (derived from an article in *Proceedings of the Society for Experimental Biology and Medicine*):

> The physiological effects of hormone P were demonstrated over 30 years ago [by several scientists referred to in parenthetical citations].
>
> Since it has been shown [by several scientists referred to in parenthetical citations] that substance A apparently acts in this way,
>
> And since it has been shown [by several scientists referred to in parenthetical citations] that a certain method B works to test effects of substances like substance A on hormones like hormone P,
>
> The purpose of this study is to examine the effects of substance A on hormone P, using method B. [Chatterton et al. 102]

There are three kinds of detail in this Introduction: (1) the particular findings (those things that were demonstrated or shown in earlier studies), (2) the references to the earlier studies and scientists that produced the findings, and (3) concrete information about the subject of the current study. The emphasis is heavily on details about the history of the study.

In Chapter 8 we also noted that the content of Introductions has recently been changing. One of these changes—the growing number of references used in Introductions—affects the number but not the kinds of details in Introductions. However, the increasing use of informative subheadings and results in Introductions does affect the kinds of details therein. Linguists Carol Berkenkotter and Thomas Huckin use the term "informative subheading" to denote those subheadings that include statements of results. For example, instead of relying on a noun phrase for a heading ("Dowex 1-Chloride Separation"), informative subheadings might present a complete sentence ("CR2 Binds Specifically to an N-Terminal gp350/220 Synthetic Peptide"), thus making a declarative statement of results. In their study of several hundred science articles, Berkenkotter and Huckin discovered that none of the subheadings in their 1944 sample were informative, but 35 percent of the 1989 sample were (this is still a minority of the total cases). The number of Introductions in their sample that included statements of results rose from 56 percent in 1944 to 76 percent in 1989.

These changes nudge the emphasis in Introductions from the scientific history toward what Berkenkotter and Huckin call the "news value" of research articles. There seems to be a new form developing in which scientists attempt to combine the virtues of a chronological story and a news story. As in a news story the important conclusions—the *end* of the story—are told at the beginning, in the Introduction. But the authors go on to tell the whole of the story for those who want to read it. The point for our study of detail is simply that you may have to learn to include more different kinds of details—especially those conveying the newsworthy findings—in the Introduction than has long been the tradition in scientific writing.

Materials and Methods It is true that increasing numbers of publications are either printing Materials and Methods in smaller typeface than the rest of a paper or placing this section at the end, as if it were an appendix, but the majority of papers still follow a traditional IMRAD format, and in any case the format does not change the kind of details in Materials and Methods. The list from Chapter 8 indicates the kinds of detail as well as the organization:

- age, weight, sex, supplier, etc. of any plants or animals used,
- drug dosages given to experimental subject,
- exact specifications for, and methods of measuring, chemicals used,
- exact specifications for machines used, often including the manufacturer,
- methods used to calibrate machines,
- diagrams of the experimental design,
- descriptions of all control groups used,
- explanations of all variables considered,
- descriptions of modifications of standard procedures,
- ethical precautions taken (especially when using animal or human subjects),
- precise descriptions of every experimental step,
- descriptions of laboratory conditions—temperature, humidity, etc.,
- data that justify use of certain materials or methods (note that these data go in Materials and Methods, not in Results),
- precise explanations of how results were gathered,
- explanations of all methods used to organize and present results, and
- descriptions of statistical tests applied to data.

Results Perhaps the most important characteristic of details in the Results is that they are *summarized* details. You do not give your readers your raw data, but the essential facts. And you provide this distilled information in graphically accessible forms—tables and figures. Since most of the information in a scientific paper is quantified, these tables and figures present numbers, and the general rules for defining acceptable numerical details are the rules of statistics.

In addition to graphic tables and figures, illustrations appear in Results sections. Photographs and drawings, for example, help writers to explain and clarify. As part of an explanation of how fishes are classified by anatomical structures, a textbook might discuss the fact that some fishes have ctenoid scales (comblike on the back edge) and some have cycloid scales (rounded on the back edge); the textbook might also include photographs or drawings to illustrate the difference.

Professional articles also include explanatory photos and drawings, but not of such basic characteristics as types of scales; only the words *ctenoid* and *cycloid* would be used, with the assumption that the audience knows what the different kinds of scales look like. Papers in professional journals do, however, take advantage of the fact that readers give a great deal of attention to graphics. Scientists use a greater variety of graphics than ever before (thanks largely to computer graphics programs) and do so with awareness of their rhetorical effects (we will talk more about this in Part 5).

Little detail beyond what appears in tables and figures is added to the text of the Results section. That text summarizes the important information from the tables and figures, so it reports some of the key details from those graphics, but it adds no different *kinds* of detail.

One added type of detail consists of statements of statistical significance. You may remember the tables that we looked at in the social sciences part of this chapter; they include notes that indicate the statistical significance of the findings. When this information is not part of a table, it is included in the text of the Results. A typical sentence might read something like this:

> Net values were significantly different ($p < 0.01$) in the control and experimental groups.

The parenthetical note explains that the data have a 1 percent level of significance. Virtually every time you see the word *significant* in the Results section of a scientific paper it is immediately followed by a p-value.

Discussion The Discussion returns to the main issues raised in the Introduction, but with the emphasis fully shifted from the background of other scientific studies to the contributions of the present study. The amounts of the two main kinds of detail thus change, but the kinds are essentially the same. The one addition to the kinds of detail included is that the Discussion may contain detailed suggestions about future research that the authors believe should be conducted.

Exercise 11.6 Analyzing the Kinds of Detail in Student Writing in the Natural Sciences

Examine this Methods section of a student's poster project. What kinds of detail are used? Do they seem appropriate? effective? Explain the audience and purpose of the paper, and place your judgments of the appropriateness and effectiveness of detail in that context. In order to help you to better understand the paper, I have included the Abstract. (This is the same paper that we used for Exercise 2.6.)

ABSTRACT

To compare antimicrobial potency of several brand-name disinfectants, dilutions of Lysol Disinfectant, Pine-Sol Cleaner, Clorox Clean-Up, and The Works Glass and Surface Cleaner were inoculated with stationary-phase *Staphylococcus aureus* culture. Inoculated solutions were tested for antimicrobial activity by plating samples onto L agar and determining presence of or inhibition of growth after 24 h of incubation at 37 °C. Lysol-coefficients were calculated to be 0.0888 and 0.0536 for Pine-Sol and Clorox, respectively. The Works showed no antimicrobial activity at any concentration.

MATERIALS AND METHODS

Inoculum Preparation

A freeze-dried culture of *Staphylococcus aureus* (ATCC) was obtained and was rehydrated at 37 °C in 4 mL of L broth (3). A transfer loop sample was plated onto L agar and incubated overnight at 37 °C to determine purity and viability. The culture was reestablished from a single colony into 12 mL of L broth and was incubated in a 37 °C shaker water bath for 24 hours to obtain stationary phase growth.

Preparation of Dilutions

Using deionized water, one-tenth serial dilutions (10^0 to 10^{-4}) were made of Lysol Disinfectant (5.5% phenol), Pine-Sol Cleaner (19.9% pine oil), Clorox Clean-Up (2% sodium hypochlorite), and The Works Glass and Surface Cleaner (isopropanol). Based on preliminary tests, additional dilutions were prepared to obtain 0.02, 0.04, 0.06, and 0.08% Lysol samples, 0.2, 0.4, 0.6, and 0.8% Pine-Sol samples, and 2, 4, 6, and 8% Clorox samples. A 5-mL sample of each dilution was placed in a 10-mL screw-cap test tube and was incubated at 25 °C.

Inoculation and Calculation of Lysol-Coefficient

Each 5-mL dilution sample was inoculated with 0.5 mL of stationary-phase *S. aureus* culture. After 5 minutes, 10 minutes, and 15 minutes of incubation at 25 °C, samples were taken from each tube using a transfer loop and were plated onto L agar. The plates were incubated at 37 °C

> for 24 hours and subsequently examined for growth. A modified phenol-coefficient (2) was calculated using Lysol as the standard. Effective dilutions of each disinfectant being tested were calculated using the following equation:
>
> $$\frac{\text{Dilution killing bacteria at 5, 10, and 15 min} + \text{Dilution unable to kill bacteria at any length of time}}{2} = \text{Effective dilution of disinfectant}$$
>
> To determine the Lysol-coefficient, the effective dilution of each disinfectant was then divided by the effective dilution of Lysol.

Amount of Detail

Amount of Detail in the Sections of a Research Report Most questions about the amount of detail in scientific writing are answered by the rules of statistics, introduced earlier in this chapter. What follows are some additional comments about amounts in the sections of a scientific paper.

Introduction An Introduction must include enough detail about the background to convince the audience that the information is both needed and new (sufficiently different from what others have already reported). The new part of the story, in other words, must really be new and be newsworthy. Detailed citations of earlier studies do much of the work of convincing an audience that a study possesses those qualities.

How many such citations does that work take? The answer, of course, depends on many factors. If you are publishing a radically new work on an important subject, it may be so newsworthy that it appears in the *New York Times* before it comes out in a scientific journal. You may remember, for example, all the attention created by studies a few years back that claimed to have discovered a method of cold fusion. In that dramatic a case, the authors could have used no citations and still would have been on the evening news (it turned out that the claims could not be validated, so their claims were judged not to be new knowledge).

In the typical paper, however, the number of citations is high. Remember that science accumulates knowledge; as we gather more information about a subject, there is simply more to cite. A biology student at my school collected a random sample of forty papers published in scientific journals (*American Journal of Science*, *American Naturalist*, *The Botanical Review*, *Endocrinology*, *Journal of Organic Chemistry*, *Physical Review*, and *Science*) since 1993, all between ten and fifteen pages long. The number of citations in the Introductions ranged from sixteen to fifty, averaging just under twenty-seven. And that average was roughly the same in each of the different disciplines (biology, chemistry, and physics) sampled.

Materials and Methods As we said when talking about kinds of detail in Materials and Methods, even if this section is increasingly being relegated to the lower status of an appendix, it still must provide all the information necessary for someone else to duplicate the experiment. It is, in other words, built almost completely on how-to details. One of the reasons that scientific journals are giving Methods less prominence is that their readers are assuming that the journals' reviewers (the people who decide whether or not an article should be published) are carefully checking the methodology. And, in fact, among the first things that reviewers comment on when suggesting revisions or explaining why they have decided not to publish a paper are the methods. My point is simply that you should not be misled by the lesser prominence of Materials and Methods in published papers; you cannot afford to be less than complete in the amount of explanatory and descriptive detail you offer in this section.

Results In the Results section, much of the space is given to graphic summaries of findings: typically, 50 to 80 percent of the page space. Further, you will convince your audience that you gathered enough data by specifying the level of statistical significance, expressed as $p <$ or $>$ the calculated value. So the basic rules for this section are to give virtually all the space to your detailed findings and to gather enough detail to be able to assert statistical significance.

I have not said, however, what p-value is considered statistically significant in the natural sciences. In the social sciences the standard is a p-value of 5 percent or less (crudely put, that means there is at least a 95 percent chance that your findings represent the truth). Social scientists demand such high levels of confidence in their statistics because their subjects are highly complex; it is extremely difficult to create all the necessary controls to be sure of valid results when you are dealing with humans' social behavior. Natural sciences tolerate larger p-values, depending on the subject of the study. Imagine that you conduct tests on a new drug for controlling cancer; although you find that the drug does reveal positive benefits, your data calculate a p-value of only 50 percent. You, and the editors of a journal, might still find that level of confidence sufficient to merit publication—to encourage and direct further studies. Generally speaking, however, natural scientists aim for p-values as high as those expected in the social sciences.

Let me comment briefly on the relationship between detail in the graphics and in the text of the Results section. Look at the following example from an article in the *New England Journal of Medicine* (we discussed this same article in Chapter 8). It reports on a study of relationships between air pollution and mortality rates in six cities. The first paragraph of the Results is introduced by the subheading "Characteristics of the Cohort [the group of people studied] and Air Pollution Data." The paragraph below is the entire section under this subheading (I have added numbers in brackets to identify the individual sentences). The table and figures reproduced in Figure 11.4 are those referred to in the paragraph.

> **[1]** The characteristics of the cohort and the values for air-pollution measures are summarized in Table 1. **[2]** For all measures of air pollution except the ozone level and aerosol acidity, ambient concentrations

FIGURE 11.4. *Graphics in a results section.*

Table 1. Characteristics of the Study Population and Mean Air-Pollution Levels in Six Cities.*

CHARACTERISTIC	PORTAGE, WIS.	TOPEKA, KANS.	WATERTOWN, MASS.	HARRIMAN, TENN.	ST. LOUIS	STEUBENVILLE, OHIO
No. of participants	1,631	1,239	1,336	1,258	1,296	1,351
Person-years of follow-up	21,618	16,111	19,882	17,836	17,715	17,914
No. of deaths	232	156	248	222	281	291
Deaths/1000 person-years	10.73	9.68	12.47	12.45	15.86	16.24
Female sex (%)	52	56	56	54	55	56
Smokers (%)	36	33	40	37	35	35
Former smokers (%)	24	25	25	21	24	23
Average pack-years of smoking						
Current smokers	24.0	25.6	25.2	24.5	30.9	28.0
Former smokers	18.0	19.7	21.8	21.1	22.0	25.0
Less than high-school education (%)	25	12	22	35	45	30
Average age (yr)	48.4	48.3	48.5	49.4	51.8	51.6
Average body-mass index	26.3	25.3	25.5	25.1	26.0	26.4
Job exposure to dust or fumes (%)	53	28	38	50	40	48
Total particles ($\mu g/m^3$)	34.1	56.6	49.2	49.4	72.5	89.9
Inhalable particles ($\mu g/m^3$)	18.2	26.4	24.2	32.5	31.4	46.5
Fine particles ($\mu g/m^3$)	11.0	12.5	14.9	20.8	19.0	29.6
Sulfate particles ($\mu g/m^3$)	5.3	4.8	6.5	8.1	8.1	12.8
Aerosol acidity ($nmol/m^3$)	10.5	11.6	20.3	36.1	10.3	25.2
Sulfur dioxide (ppb)	4.2	1.6	9.3	4.8	14.1	24.0
Nitrogen dioxide (ppb)	6.1	10.6	18.1	14.1	19.7	21.9
Ozone (ppb)	28.0	27.6	19.7	20.7	20.9	22.3

*Air-pollution values were measured in the following years: total particles, sulfur dioxide, nitrogen dioxide, and ozone, 1977 through 1985; inhalable and fine particles, 1979 through 1985; sulfate particles, 1979 through 1984; and aerosol acidity, 1985 through 1988.

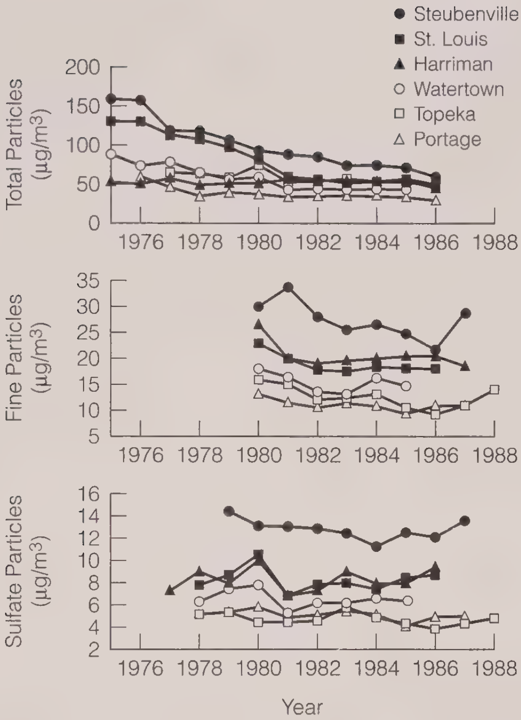


Figure 1. ·Annual Average Concentrations of Total Particles, Fine Particles, and Sulfate Particles in the Six Cities.

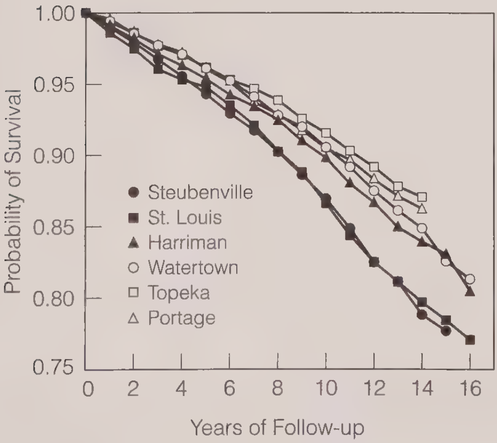


Figure 2. Crude Probability of Survival in the Six Cities, According to Years of Follow-up.

FIGURE 11.4. *Continued*

> were highest in Steubenville and lowest in Portage or Topeka. **[3]** The mean acidity of the aerosol was highest in Harriman, but second highest in Steubenville. **[4]** The mean ozone concentrations were highest in Portage and Topeka. **[5]** The concentrations of total particles declined during the study period, especially in Steubenville and St. Louis; the annual average concentrations of fine and sulfate particles varied relatively little during the study period (Fig. 1). **[6]** Crude mortality rates (Table 1) and survival curves (Fig. 2) both show that mortality was highest in Steubenville and St. Louis and lowest in Portage and Topeka. **[7]** Differences in the probability of survival among the cities were statistically significant ($p < 0.001$). (Dockery et al. 1754)

Sentence 1 tells us that the authors are presenting "summarized" data. Sentences 2 through 6 give us the main points, but they do so *without* interpretive comments—just the facts. Then the final sentence indicates the statistical significance, again without comment.

Discussion Scientists know that the purpose of the Discussion is to explain the importance of the findings—the point of the story told in the study. They therefore revisit certain pieces of data from the Results section to support and clarify their main conclusions. Consequently, detail in this section is not so dense as in Methods or Results, but the points in the Discussion must nonetheless be solidly grounded in the details of the paper. Look again at the paper on air pollution and mortality rates. Here are the first two sentences of its Discussion:

> In this . . . study, the mortality rate . . . was associated with the level of air pollution. Mortality was more strongly associated with the levels of fine, inhalable, and sulfate particles than with the levels of total particulate pollution, aerosol acidity, sulfur dioxide, or nitrogen dioxide. (Dockery et al. 1756)

None of the statistical data from the Results are repeated. Instead, the Discussion supplies a response to the question we implicitly ask as we read through the detailed findings in the tables and figures: What conclusions can you draw from all of this? And the Discussion states those conclusions as concrete findings.

Kinds and Amount of Detail in Review Articles From our earlier discussions of review articles you know that they contain the kind of detail we normally find in the Introductions of articles—detail about previous studies. A review article summarizes a group of studies on a single subject. In order for a review article to convince readers that its interpretation of that group of articles is accurate (without which it cannot hope to suggest directions for new research—another purpose for review articles), its details must be thorough. The audience should believe that the author has read *all* the applicable research, and the author can accomplish that only by extensive, detailed citations from those articles. Consequently, review articles are richly peppered with parenthetical citations.

The first two paragraphs (twenty-three lines long) from "How to Be a Fig" (a review that I mentioned earlier for its clever, nontraditional title) serve as an example of the density of detail in reviews. These paragraphs present the author's summary of ten distinct and factually detailed characteristics of all fig species (for example, "a complex obligatory mutualism with their pollinating agaonid fig wasps"). They also make thirty-six references to previous publications about figs. Although a review does not present new experimental findings and relies heavily on the author's summaries and interpretations of the articles under review, it still constructs those summaries and interpretations on a foundation of plentiful detail.

Exercise 11.7 Analyzing the Amount of Detail in Professional Writing in the Natural Sciences

Here is the first part of the Materials and Methods section of a published scientific paper. What proportion of this section is devoted to details? Does the amount of detail seem effective? Are there any details that you would add or delete?

Compare the amount of detail in this sample of a professional paper to the amount of detail in the first two parts (roughly the same length as the sample reproduced here) of the student's Materials and Methods section used in Exercise 11.6. Are there any differences that you notice in the amount of detail used? Is one sample more densely packed with detail than the other? If you notice any differences, can you explain the reasons for them?

MATERIALS AND METHODS

Animals

Female rats, weighing between 180 and 230 g, obtained from Hormone Assay, Chicago, were housed in an air-conditioned room lighted daily from 05.00 to 17.00 h. Vaginal smears obtained by lavage were examined daily for at least two complete estrous cycles before treatment was begun. Perphenazine (Schering Corp.) was dissolved in 0.03 *N* HCl to concentrations of 2.5, 5.0, or 10.0 mg/mL, and 0.1 mL/100 g body weight was administered subcutaneously daily.

Procedure 1. Perphenazine treatment was begun at 12.00 h on the day of estrus and was continued for a total of five daily injections. Blood samples of between 1.5 and 2.0 mL were collected from the cut tip of

> the tail of rats anesthetized with ether immediately before the first, second, and fourth injections of perphenazine. Bleeding was stopped by ligating the tail 3 mm from the cut end. The last blood sample was collected from the severed vessels after decapitation 24 h after the last injection of perphenazine. Control rats received the same dose of the 0.03 *N* HCl vehicle daily and were bled on the same schedule. (Chatterton et al., "Ovarian Responses" 102)

WORKSHOP 15

Detail in the Natural Sciences

In this workshop you will consider Clarence's questions and choices about detail. If you want to review the assignment for Clarence's paper, it can be found in Chapter 2 (page 43). You will also need to refer to the complete text of Clarence's paper, in Workshop 2, in order to complete this workshop.

CLARENCE'S QUESTIONS ABOUT DETAIL

Clarence asks many questions about the detail in his paper—questions about the kinds and amount of detail as well as about how precise to make the detail. His concerns are typical of natural scientists. In fact, many of the questions that Clarence's teacher wrote on the first draft of this paper are similar to the questions that Clarence lists here ("Should you cite another prior study here?" "What's the time frame for evaluating the degree of acclimation?" "What do you mean by saying the 'floor' of the gradient?"). The driving concern in natural science writing is for precision and clarity in the presentation of concrete, objective information. So natural scientists inevitably ask many particular questions about using details to make their information clear to their audience.

More generally, when he spoke with me, Clarence made a point that is common among students in the natural sciences. One of his main concerns throughout the process of conducting his research was that he gather *enough* details to support his hypotheses. Sometimes scientists will simply have to say that they don't have enough data to draw a conclusion. In that case, they will delete all the incomplete data from their papers and hope to gather sufficient data for a later publication.

- How will I keep the title brief and still include the vocabulary involved? [Remember our discussion of scientific titles and the need to include all key words, the key details, so that a publication can be accurately indexed—Chapter 5.]
- I wish to report ± temperature for cultures in the Abstract—is "about" appropriate or too subjective, needing to be more precise?

- Since I want to do a poster presentation, how can I keep my Abstract to one page but still get it all in?
- How many numbers (if any) should appear in each section?

In Materials and Methods:

- With two different species in the test, can I refer to just the genera in reporting and not specify species?
- Do I say enough to imply the bugs' temperature sensitivity?
- Does saying in "open field arena" imply stimulus-free environment or should I specify that too?
- Does the ability to sense small temperature differences really affect bug behavior?
- Is it accurate to say that the big selection of temperature area is due to acclimation? Should I introduce some speculation or qualifications here? How would I be able to tell if it is the case or not?
- How can I best describe the "center" of the test arena?
- Should I include and define upper temperature limits?

In my two tables:

- Is regression always linear?
- What is correlation? What is a correlation value? What does such a value describe? How does it describe this?
- How do I most effectively tabulate/find location temperatures and the relations between them? Do I need to include an error measure? What method of measure?

In Results:

- Can I leave the 2-sample *t*-test info strictly in Table 2, or should it also appear in the writing?
- Is the high-temperature "line" accurately described as a "barrier"? Is it a mark of tolerance?
- Is this data/research adequate to say there is no acclimation/adaptation?
- I'm again questioning the validity of overcompensation. If I'm trying to explain this, how should I attempt it? Do the animals have a "preferred temperature range"? In too hot and too cold, can the animals be expected to go in the opposite direction? Does an opposite direction even exist?
- Can the results of several *t*-tests be combined in interpretation to give an even further interpretation?
- Is difference of location of incubator animals adequate in "showing/supporting" some sort of thermal acclimation? How do I continue on to show no evidence of this in the other groups?
- I find previous work related to what is seen in the incubator group and am again left at a loss to explain the other sets.
- How do I define the apparent high-temperature limit? Is calling it a wall or barrier going too far in suggesting it cannot be crossed? Can the bugs sense this as an actual detrimental/lethal temperature?

- Can I include multiple species data in the graphs? Do I really want to? I do not think it supports my conclusion. Is it then proper to leave it out?
- Are numbers permissible here? How much info should show up in the caption?
- If no variation/error is marked, is it necessary to say why? Where it is marked, is it required that I say exactly what the error is: how it was calculated? Is there a better or worse way to calculate this given each situation?

  In graphs:
- Is it a problem to have one data set end at day 19 and the other two at 22? Should they all just be marked out to 22?

ANALYSIS OF THE KINDS AND AMOUNT OF DETAIL

Using information from our discussion of detail in the natural sciences, analyze the kinds and amount of detail in Clarence's report. First, list (with specific references to the parts of the report) the kinds of detail that Clarence used. Then, examine how much detail is used in each part; again, report your findings in detail.

Having done that work, think further about the use of detail by comparing it to what Clarence could have done. Imagine how different the detail would be if Clarence had done a qualitative study of his insects. Is such an approach to Clarence's subject imaginable? Would it be scientifically useful?

REVISION OF THE KINDS AND AMOUNT OF DETAIL

Using your analysis of the kinds and amount of detail, suggest possible revisions. First, suggest general changes in the kinds and amounts of detail used throughout the paper. Next, select a part of the paper (a section of one to two pages) that you think is weak in its use of detail. Explain its weakness(es) and how you would revise. Sometimes you can gain insight on possible revisions by refining the purpose and audience. Remember that the papers reproduced in the workshops all received grades of A or A−, so you probably will not find glaring weaknesses, but you can always find ways to improve.

Questions for You

Having worked with the detail in Clarence's paper, do you have any specific questions that you would add to his list? or any remaining general or specific questions about the principles of using detail in the natural sciences? If so, write them out for your teacher to see.

BUSINESS

Imagine yourself sitting at your desk, sending e-mail, writing memos, composing long and short reports, drafting letters—to people in and out of your company. Choosing the kind and amount of detail obviously depends, as do all major decisions in business writing, on the great variety of business documents and audiences. A letter asking a potential customer to purchase your product or service will require different kinds of detail than an in-house memo requesting an action by a subordinate employee.

Choosing the right amount of detail will also challenge you; it is not enough to say that longer, more complex documents require more detail than short ones. In the early planning stages of writing a report, you will have to estimate the cost of producing a large amount of data. After the information is gathered, you will choose ways of summarizing and presenting it to make it maximally efficient in leading to effective decisions.

As we discuss the kinds and amounts of detail that business writers traditionally choose, keep in mind two key questions:

- How do I select the kind of detail that will most directly solve the problem that is the focus of my writing?
- How do I select the amount of detail that will support a confident decision without spending more on the detail than the decision merits?

Kinds of Detail

Variety The word *variety* here refers both to the different kinds of business documents and to the necessary variety of detail that those types require. I knew a successful auto salesman who used to say, "No matter what the new technology, safety features, or whatever, people buy with their eye." Advertisements for cars seem to affirm the salesman's idea; the detail in those advertisements is primarily visual—the beautiful pictures of the cars aim to catch the reader's eye. The sales brochures that are distributed at auto dealerships include technical information, but it is located at the back, as if in appendixes.

Now consider a different business situation—not sales, but problem-solving research. The customer service department at a vitamin manufacturing plant has been receiving complaints that consumers are experiencing accelerated heart rates after taking the company's multi-vitamin. This calls for a technical report, which probably would include research into the published information about similar products as well as experiments conducted by the company's science division. The report would focus on medical data, with the purpose of determining the cause of the customers' problems. So it would indicate which compounds in the multi-vitamin are probably causing the physical reactions, and it would specify the percentage of people likely to suffer the adverse symptoms. Finally, it would recommend a detailed course of action.

You, therefore, will learn to use examples, images, statistics, expert opinions, survey results, personal observations, and many other kinds of detail in business writing.

Types of Primary Detail in Business Writing Primary data in business is that which is collected specifically for a document that you are writing. In other words, if you conduct a survey to help you answer a question that you need to address in a report, your survey results are primary data. If, however, you use data from a published study, from earlier company reports, or a company database, that is secondary.

Primary research is especially necessary in business because businesspeople need to discover timely answers to their questions and thus to recommend timely decisions. They collect primary information in the following ways.

Experiments The earlier example of the vitamin manufacturer's experiment reminds us that businesses conduct scientific experiments. The experimental data may be kept confidential, as company property. The data may be sent to various people in the company; one person may need a single piece of information while another needs a table of statistical data. Details from the experiment will help to answer questions, to solve problems, and eventually to support recommendations and decisions.

Surveys Business writers conduct survey research, which is similar to the survey research a social scientist does. Business writers collect and analyze statistical data to help their companies comprehend complex situations—customers' attitudes to an advertising campaign or employees' responses to a new company policy.

Interviews and Focus Groups Interviewing allows a business writer to discover complex nuances of information, not merely answers on a survey that asks for coded and computer-scanned answers. Unfortunately, conducting and then analyzing interviews is time-consuming, in other words, expensive. Some businesses are therefore using focus groups. A small, representative group of people gathers to generate as many ideas as possible about the subject of the study, and their ideas and responses are recorded. The writer, having thus gained a fuller sense of the range of ideas about which research could be conducted, becomes better equipped to devise experiments, surveys, and other tools for collecting a variety of kinds of information.

Observations Businesspeople must often report their observations. Sometimes that means conducting formal observations (recording how people in a supermarket respond to an advertising medium); sometimes it means writing a memo to a supervisor that reports on a telephone conversation. Writing detailed observations first requires that a writer learn to distinguish important from unimportant observations: The boss probably doesn't need to know that a customer spoken to over the phone sounded as if he had a cold, but the boss might find it useful to know that the customer's tone of voice indicated that he was displeased with the company's new shipping clerk—if the customer's relationship to the clerk relates to the purpose of the report.

Characteristics of Effective Detail in Business Writing Effective details in business writing exhibit the following characteristics.

Focus The last sentence of the paragraph on observations should remind you that all details, whatever the kind, must serve a purpose. That is the first and most essential characteristic of effective detail in business writing. Consider the detail in an e-mail message. The writing situation is this: A photocopy machine was housed in a room large enough for only it and one person; people waiting to use the machine stood outside the room, next to the desks of several employees who were distracted by the conversations of the people waiting. You recommended moving the machine to a larger room. A week after the move your supervisor, who had somewhat reluctantly approved the move, sends you an e-mail message:

> Are things better now that the copier has been moved? Have any new problems turned up as a result?

Your answer:

> I spoke with the people located by the former copier room, and they were happy to trade the increased quiet for the greater distance to the copier. People by the new copier location are shielded from the noise by a bank of file cabinets, and they report no new distractions. I did, however, observe that several people are annoyed by the new Muzak carried over the office intercom; I thought that was something interesting that you might want to know.

The detail in the first two sentences focuses on the question; the detail in the last sentence is completely off the subject, and the sentence should be deleted. The problem with the Muzak, if you decide it merits the attention, should be treated in a separate message.

In the humanities, writers often enrich their interpretations with detail about items that are simply interesting. The purpose of business writing does not allow you to include detail only because it is interesting. Try to translate the purpose of each piece of business writing into a question or set of questions. Choose only the details that answer the questions.

Reputation of the Source of Secondary Information Scientists may focus their attention on accumulating facts about nature and try to leave the reputation of the scientist writing about the facts out of the question. Business is less precise than science. Every business decision involves some degree of risk, and people who develop a reputation for making good decisions gain trust and credibility. When you use detail from a secondary source, choose sources with good reputations; do not let your writing be tainted by negative associations.

Method Because the form of business reports does not place much emphasis on methods for collecting information (an explanation of methods probably would be relegated to the small print of an appendix) and because you want to keep down the cost of writing, you may be tempted to be less careful about your methods than scientists must be (using statistical samples that are too small, for example). Although your primary audience (the supervisor for whom you write the report) may not pay attention to methods, many other secondary audiences will also read your report, and you should assume that someone will check your methods carefully.

Timeliness Business changes; last year's facts may no longer be useful. Gathering new facts is expensive, but if information is outdated, it could lead to an even costlier mistake in making a poor recommendation.

Accessibility Time is money, and your readers will want to gather the essentials from your writing as efficiently as possible. Graphics (tables, figures, and so forth) allow readers to digest the most information in the shortest amount of time. Effectively chosen visual formats (see Part 5) and easy-to-follow structures (see Chapter 8) also help to open access to the detailed information.

Exercise 11.8 Analyzing the Kinds of Detail in Business Writing

Here are four short pieces of business writing, the first two written by a college student and the second two written by a business professional. At the beginning of each pair I indicate the purpose and audience.

Use the categories discussed in the preceding section to analyze the types of detail used in each. Then explain the ways in which the kinds of details seem effective or ineffective; be as specific as possible. Finally, explain any differences (and possible reasons for those differences) between the choices of details in the student and professional samples.

The first two letters were written by a student for a business-writing class. The letters were part of a project in which a group of students pretended to be a consulting firm studying the possibility of constructing a snack bar in a public area of a college dormitory. The first letter was written to the college director of housing, the person in charge of the project; it is a "letter of acceptance," its purpose being to accept the job of conducting a feasibility study and making recommendations concerning the snack shop. The second letter accompanied the completed project, as a "letter of transmittal," delivered to the director of housing.

Dear Ms. Erin:

Thank you for seeking our advice concerning the snack shop. We would be happy to work with you and the Housing Office at Bard College.

Our firm will do a detailed study of the demand for a snack shop, the costs and benefits, and the types of regulations you will have to meet. After examining the results of the collected data and the options available to you, we will provide you with our recommendations.

I am looking forward to working with you over the next few months and am confident in our firm's ability to assist you on this project. if you have any questions or need to get in touch with us for any reason, don't hesitate to contact me or any of my associates.

Sincerely,

Dear Ms. Erin:

Here is the proposal that you requested. We believe that a snack shop located in Theta Epsilon Dormitory will be an excellent addition to your college campus. You expressed concern about the possible expense of this project. We are happy to assure you that the school should not lose any money; instead, a snack shop should provide additional income for the school. All of this information and more is included in the proposal.

Thank you for seeking our advice. We will get in touch with you at the beginning of next week. In the meantime, if you have any questions, feel free to call.

Sincerely,

These two memos were written by people in the public relations office of a large corporation. They are both written in regard to a project being supported by the corporation's charitable foundation—a campaign to bring tutoring to children in areas, in the United States and abroad, with high rates of illiteracy. The first memo was written by an assistant in public relations and sent to the director; its purpose was to explain what he and his team must do to initiate a local chapter of the campaign. The second was written by the director of public relations; it was sent to the board members of the campaign. Its purpose was to let board members know when a meeting was to be held and to encourage them to attend.

MEMORANDUM

TO: Vince
FROM: Kay
DATE: January 23, 1995
RE: Operation Read–Domestic Program

Vince, I have reviewed information relative to OR's Domestic Program.

The first step in initiating the program is to get the approval of the local school board and provide the schools with pertinent information. The public school system designates a person at each school to identify and refer low-income students in need of tutoring. They meet with the parents and explain the program, and, if interested, the parents then submit a one-page application to Operation Read. The application is referred, along with test scores, to a participating teacher/school; if help is available for the child, a meeting with the person in charge of tutoring is scheduled.

The manual says that in order to run the program you must have an administrator. This person can be a volunteer; however, he or she must be available for several hours per week. In NY and Philadelphia, schools have donated office space for this purpose. Operation Read encourages chapters to participate in this school outreach program. It counters the negative aspect of only helping foreign children and broadens each local chapter's base of support.

MEMORANDUM

TO: Members of the Board of Directors
FROM: Vince Amalfi
DATE: March 25, 1996
RE: Operation Read Board Meeting

> Our first board meeting will be held at 3:30 p.m. on April 11, 1996, at the Grand Plaza Hotel. Dr. Tom Melvin, the founder of Operation Read International, will make a presentation about the goals and mission of Operation Read, and Dr. David Rire, a local professor of education and linguistics who has been on several Operation Read International missions and who had been very instrumental in forming our Ohio chapter, will talk about his experiences with Operation Read. We will also be discussing the active role that Operation Read of Ohio will be taking in the local elementary schools.
>
> Hope to see you there!
>
> By Monday, April 8, 1996, we will let you know where in the Grand Plaza the meeting will be held.

Amount of Detail

The primary considerations that business writers take into account when deciding how much detail to supply are audience and purpose (always considered in tandem) and cost.

Audience and Purpose As we noted in Chapter 2, a single document may have many different audiences, each of which may read only part of a document—each part designed for a different purpose. Let's say that you are writing a report on a reconfiguration of the assembly line at your plant. Some readers—the executives who must make the final decision—will look closely at the detailed costs; the engineers who would have to implement the recommendations will give their attention to your technical details; and the personnel department will focus on details about projected personnel changes. You must anticipate the informational needs of each of your readers. The format of business reports allows you to place different amounts of detail in different sections: masses of raw data in appendices, summarized detail in tables and graphs in the body, and super-condensed detail in the executive summary. In that way you can satisfy each of several different audiences without distracting the others.

Of course reports are not the only type of business writing that utilize detail, and the appropriate amount of information varies with the variety of documents sent to different audiences for different purposes. In Chapter 2 we looked at a promotional report sent to potential customers by a company selling an advertising medium, which I called ClearTalk. The owners of ClearTalk hired two research firms, one to do qualitative research (it conducted over 2,000 interviews) and one to do quantitative research (it collected data in over 100 test markets). The voluminous data produced by the research firms was duly reported—in extensive graphs, tables, and appendices of raw data—in the research reports that the firms wrote. However, the promotional report is short—eight pages, with the company logo, a heading that repeats one of the four themes outlined in the introduction (for example, "ClearTalk improves the shopping experience"), only one or two summary sentences per page, and one stark graph on each page after the introduction.

The detail in the report is highly condensed and focused. The company gives only the essential information—in visually accessible form. It leaves out distracting complexities that could blur the focus because the audience needs only summarized detail to make its decision: whether or not to take the next step toward making a deal. The process is efficient because the amount of detail is appropriate to the audience and purpose.

The amount of detail in short documents also varies according to audience and purpose. You may have to write a memo that supplies one piece of information or pages of raw information that someone needs to make a decision. It is not uncommon to write something like

> Tom, here's the information you requested.

and to follow that with nothing but detailed information—one item or pages of data.

I have been focusing on the decision-making purpose of business writing, but you should remember that every business document does not lead to an immediate decision. Sometimes you write in order to send thanks or congratulations or to publicize a community service project sponsored by your business; in that way you help to create a climate that encourages favorable decisions in the future—in other words, you improve public relations. Here is a letter from the director of a nonprofit organization to the person that the organization has chosen to honor at its annual fund-raising benefit.

> Dear Tom:
>
> Could the committee have found a better, more worthy citizen to honor? The answer: a resounding "No!" All of your friends are proud that you have been chosen.
>
> This honor reflects your life of service, your benevolence, and your exemplary inspiration and motivation.
>
> Congratulations. Mazeltov. Blessings on your head.
>
> Very truly yours,

This letter contains no concrete detail; its immediate purpose is simply to convey congratulations, but it has the long-range benefit of strengthening

Tom's ties to the nonprofit organization and thus making him more likely to contribute in the future.

You should also keep in mind future audiences. For example, several years after your report on reconfiguring an assembly line has been submitted and acted on, company engineers might need to read it again to see if they can find information to help them solve a problem; or lawyers may need to find detail in the report to defend the company against a lawsuit charging that the line is unsafe.

In addition to the preceding factors, remember the general principle that a business teacher at my college tells his students who ask how much detail to use:

> Less is better. Detail is important, but only relevant detail. Businesspeople are busy.

Cost Savvy business writers express the essential point by advising,

> Don't supply a $50 answer to a $5 question.

On the one hand, as we saw in our review of statistics, the more information you collect to answer a question, the more you reduce the uncertainty about your answer. But because you cannot achieve complete certainty about most questions in business, you will have to decide where to balance the cost of the information and the possible results. And even if you determine that a decision is sufficiently important to merit $100,000 worth of data collection, you will not be allowed to spend that much money if the company hasn't got that much to spend.

Businesspeople approach the question of how much detail to use much as they do any business problem—weighing costs against possible profits and losses. How much you spend gathering and presenting information depends on how much you could lose if you make a bad decision, how much you could make if you make a good decision, and how much the information you could gather is capable of reducing the uncertainty in your decision. Consequently, business writers estimate costs and benefits during the early stages of a writing project.

In addition to the general factors just discussed, you will have to take into account more specific factors. If the recommendations based on your writing are followed and they turn out to be bad, how much would it cost to change them? Imagine that you are writing about a policy on vacation time. You probably could use information that you could find in the library or gather from other companies, and perhaps you could conduct a modest survey of employees to help determine if you wanted to recommend a change and what that change would be. If you are uncertain about the costs and benefits of your recommendations, you could even qualify them by suggesting that they be implemented only for a trial period. If your recommendations produce poor results, they can be corrected inexpensively. If, however, a report of yours recommends expensive new machinery for an assembly line, that recommendation should be supported with very convincing information; if it is wrong, it cannot be cheaply corrected.

Another factor to consider is whether or not the detail you plan to gather for your writing will be useful to your company at some other place and time. If the same information can be used in other reports, to support other recommendations, then you have more grounds to justify the cost of writing the report.

Of course an inescapable factor is how much money your company has at its disposal and how it has prioritized its expenditures. You might be able to show that an expenditure on research in marketing could produce potential profits, but if the president has decided to invest heavily in new product research, you simply will not be given the budget to allow extensive data gathering.

It becomes clear that many complications will influence your decisions about how much detail to use. The simple question that has to be at the heart of your decision remains:

> Have I included enough detail to support my recommendations and allow my audience to feel confident about deciding to follow those recommendations?

Only by considering the complexities of audience, purpose, and cost in each individual situation can you answer this question.

Exercise 11.9 Analyzing the Amount of Detail in Business Writing

Look again at the four samples that you studied in Exercise 11.8. Analyze the amount of detail in each, and indicate when you think there is enough, too much, or too little. Remember that the amount of detail that should be used depends on the audience and purpose, so review the explanations of audience and purpose given in Exercise 11.8 and take those factors into consideration.

Wherever you would recommend changes, specify how much of what kind of detail you would add or delete. Do you see any differences between the student and professional samples in terms of how effectively kinds and amounts of detail are used?

Exercise 11.10 Comparing the Uses of Detail in Various Disciplines

For earlier exercises you have gone to the library and found articles in the various disciplines. For this exercise you may use some of those articles or go back to the library and find others. Your task is to compare at least two pieces of writing from at least three different disciplines and thus to see for yourself how detail is used differently in the various disciplines. Study both the kinds and amounts of detail used in each piece. Explain how they do or do not conform to the conventions for use of detail explained in the four sections of this chapter.

WORKSHOP 16

Detail in Business

In this workshop you will consider Joe's questions and choices about detail. If you want to review the assignment for Joe's paper, it can be found in Chapter 2 (page 85). You will also need to refer to the complete text of Joe's paper, in Workshop 4, in order to complete this workshop.

JOE'S QUESTIONS ABOUT DETAIL

Joe's questions and comments remind us of concerns he has expressed in other parts of his journal—concerns about combining objective information with interpretive generalizations. Here he seems to have been troubled by having to generalize from limited observations rather than from concrete research (see his first group of comments), yet he was somehow instinctively uncomfortable about using concrete statistical information because it stereotyped people in order to make business decisions (see the last group of comments). So what kind of "concrete" research do you think he meant?

He recognized, partly because his teacher questioned his use of "Mercedes and Roadmasters" (see the second group of comments), that he should have used more detailed observations; but his response to learning that he should not use weak, unobjective details ("Mercedes and Roadmasters") is to fall back on generalizations.

You will need to decide to what extent Joe is being unnecessarily hard on himself and to what extent his paper suffers because he failed to collect a sufficient number of detailed observations.

- Like I said, the third paragraph of the Initial Situation Analysis was tough. I didn't have the time to research Burlington's business environment (although I know it's generally regarded as good), so I did the cop-out. The second sentence is more shameful: "There seems to be economic growth. . . ." Although this is not concrete, I felt that since my "methodology" was mere observation, I was justified. Had I been able to research Burlington, I don't know how I would have reported what I found out.

- I still feel my observations should have been more detailed. I make the broad generalization that Schwartz's is a cash cow for old people, but I never say exactly why. . . . In an early draft, I had the sentence "Based on the large number of Mercedes and Roadmasters in the parking lot . . ." but the prof questioned it. So once again I resorted to making vague generalizations instead of the desired concrete facts.
- Of course, the hardest section was the data. To summarize I had to cut out a lot of detail (we were given pages of statistical "evidence"). I still wonder how badly I was stereotyping. Even though I was reporting research of statistical significance—it was about humans. As a humanities student, I shudder to *assume* men play tennis more or older people listen to only certain stations, but as a business student I had to base my decisions on this stuff. So I used those assumptions against my better judgment and recognized that advertising is the biggest agent of perpetuating stereotypes.

ANALYSIS OF THE KINDS AND AMOUNT OF DETAIL

Using information from our discussion of detail in business writing, analyze the kinds and amount of detail in Joe's report. First, list (with specific references to the parts of the report) the kinds of detail that Joe used. Then, examine how much detail is used in each part; again, report your findings in detail.

Having done that work, think further about the use of detail by comparing it to what Joe could have done. Pick up on the comment that Joe made in his journal—that he felt "justified" in adding broad observations rather than specific details because his method was "mere observation." Is this a legitimate justification? If he had had more time to conduct research, what kinds of detail could he have added that would have let him feel less like he was stereotyping and yet would have fit the purpose of the report?

REVISION OF THE KINDS AND AMOUNT OF DETAIL

Using your analysis of the kinds and amount of detail, suggest possible revisions. First, suggest general changes in the kinds and amounts of detail used throughout the paper. Next, select a part of the paper (a section of one to two pages) that you think is somehow weak in its use of detail. Explain its weakness(es) and how you would revise. Sometimes you can gain insight on possible revisions by refining the purpose and audience. Remember that the papers reproduced in the workshops all received grades of A or A−, so you probably will not find glaring weaknesses, but you can always find ways to improve.

Questions for You

Having worked with the detail in Joe's paper, do you have any specific questions that you would add to his list? or any remaining general or specific questions about the principles of using detail in business? If so, write them out for your teacher to see.

12

Adaptations: Detail

The coalition of a writer's purpose and audience drives every decision; that is an essential premise of this book. Writing for a nontraditional purpose or audience means using nontraditional detail, just as it means using nontraditional focus, style, and organization. Because your purpose and/or audience for individual documents will vary at some point from the traditional, you need to prepare yourself to adapt. That is the point of each of the "Adaptations" chapters.

REASONS FOR ADAPTING TRADITIONAL USES OF DETAIL

The preceding paragraph states the first and most obvious reason for adapting: The varieties of audiences and purposes for which you write will sometimes force you away from traditional choices. When, in Chapter 11, we examined traditions for using detail in the social sciences, we noted the increasing acceptance of qualitative studies, and such a shift in approach demands a shift in the use of detail.

More particularly, the trend toward interdisciplinary studies—which we discussed in Chapter 3, the "Adaptations" chapter of Part 1—naturally creates the need for hybridized uses of detail. You may remember the term *triangulation* from our discussion of the social sciences (see page 308); it refers to the practice of combining two or more research strategies. In an attempt to find new answers to complex questions, many researchers have begun to triangulate their research methods, and adapted combinations of methods produce adaptations in detail.

Not only have researchers been adapting their research methods; they have also been adapting techniques for communicating their findings. Poster projects, which we have discussed previously in this book, have long been used by scientists. Basically a poster project is a short (in the range of five to ten pages) paper pasted on a sheet of poster board. At a poster session, a group of poster projects is set up in a room, the authors stand next to their projects, and people walk around reading the posters and asking the authors questions. Recently, poster projects have been appearing at meetings of professional groups such as writing teachers, most of whom probably learned to write in the traditions of the humanities.

Poster projects offer writers such as writing teachers a venue for their sociological studies (studies of, say, the practices of certain populations of writing students). Poster projects also allow writers to take advantage of the visual possibilities of computer graphics. Even your decidedly unscientific old English teacher can now produce data tables and three-dimensional bar charts, adapting traditional uses of detail in other fields to his or her needs.

The primary reason for adapting detail is that each piece of writing communicates a unique purpose, and each writer has to use whatever detail will best clarify and support that purpose.

EXAMPLES OF EFFECTIVE ADAPTATIONS

Throughout our discussion of "Traditions in the Disciplines" in Chapter 11 we looked at adaptations, especially in the section on business writing, wherein writers constantly adapt to the variety of audiences and purposes for which they write. The following examples bring those kinds of adaptations into sharper focus.

Standardized Adaptations of Detail

The difference between what I am calling "standardized" and, in the next section, "unconventional" adaptations is merely one of degree. When a large enough group of people become part of a specialization, they develop their own conventions. Many hybridized, interdisciplinary specializations have become separate fields, and their adaptations become standardized. They have, to continue the biological metaphor, evolved into separate disciplinary species with their own traditions. In Chapter 3 I listed a small sampling of interdisciplinary journals: *Configurations: A Journal of Literature, Science, and Technology;* the *Journal of Psychology and Theology;* the *Journal of Interdisciplinary History;* and *Adolescence: An International Quarterly Devoted to the Physiological, Psychological, Psychiatric, Sociological, and Educational Aspects of the Second Decade of Human Life.* The fields represented by these journals offer examples of the ways detail can be adapted to special situations.

The *Journal of Interdisciplinary History* published an article in 1994 that discusses a problem of detail in historical research. The author of "Black Violence in Post–Civil War Louisiana," Gilles Vandal, argues that historians have mistakenly concluded that much of the violence at that time and place was black on black. Their mistake grew out of the fact that they relied on the biases buried beneath the stories printed in white newspapers, and thus they perpetuated the false interpretation of a selectively limited number of facts. They were using traditional primary evidence of historians (newspapers), they were conducting the traditional interpretive work of humanists, and they were missing the truth. Vandal gathered data from several different sources (including state and federal government records of murders) and compiled an extensive database. He uses it to show, for instance, that blacks committed fewer than 20 percent of the murders and that 73 percent of the blacks who were murdered were the victims of whites.

An essay in the *American Journal of Orthopsychiatry* ("Growing Up with a Psychotic Mother") adapts narrative, interpretive detail such as we see in the humanities to the scientific purpose and audience of the journal. The author does include a "Literature Review" as part of the Introduction, and it cites twenty-six different sources (that is the average number of citations that we noted in natural science Introductions). The Methods section details subjects and procedures according to convention. The Results, however, presents "five themes characterizing common experiences." The details that support and clarify those themes are quotations, such as the following, from interviews:

> I was abused with some regularity. I've got multiple fractures and was out of school . . . with bruises and things like that. (Dunn 180)

The author *interprets* these details to explain how they exemplify her five themes:

> Surprisingly little effort was made to protect the children from the abusiveness of the psychotic parent. (Dunn 180)

These are strategies for using detail in the humanities. You should find these adaptations familiar because they are exactly the sort of techniques that we saw when looking at examples of qualitative studies in the social sciences. And that, in turn, should remind you that there is a fine and ever-changing line between what we might call traditions and adaptations.

Throughout this book we have noted how regularly businesspeople have to adapt because of the variety of documents they write and audiences they write for. One interesting specialization in business is that of the research scientist who works for a corporation. Many people trained in the traditions of the natural sciences take jobs in business and industry; research and development labs are central to the health of most corporations.

These scientists practice their research like any other scientists, but they communicate their detailed findings in a greater variety of ways than do other scientists. The manager of a lab at a large, international corporation says, "If I'm only generating numbers, then I'm not doing my job. We [the lab team] are a problem-solving group. My writing has to translate research into solving somebody's problem." Those somebodies might be other research scientists at the company, marketing people, executives, salespeople, and so on. The detail provided has to be useful and clear to each different audience.

The use of electronic mail has caused another change in the way detail is conveyed from a company research lab to its various audiences. The lab manager quoted in the preceding paragraph writes endless e-mail messages, containing everything from a single piece of information to extensive tables of data—whatever someone needs to solve a problem. Formal research reports are on the decline at his company because the problem-solving information gets sent through e-mail and *acted* on before the lab group can go through the process of writing up a formal report. The need for specific detail for specific audiences—and the need to get that detail communicated as quickly as possible—drives the scientist in business to adapt regularly and deftly.

Unconventional Adaptations of Detail

Here we turn to examples of adaptations that are less common and that you may not have encountered. A friend of mine calls himself a "mathematical-theoretical biologist," and in his writings he uses the mathematical calculations that one sees in math, the theoretical physics common in that field, and the diagrams and electron microscopy photographs that are standard in biology. Similarly, a recent article about a biological anthropologist describes this hybridized researcher as someone who "likes to stir together" details from DNA samples, geographic records, health records, and data on ethnicity in order to support and clarify her research into genetic variation in African Americans.

Ramsay MacMullen created a stir among classicists (those who study ancient Greek and Roman cultures) when he published a book titled *Corruption and the Decline of Rome,* which he describes as being "an exercise in historical sociology." He focuses on understanding the complex systems of Roman power in terms of patterns evident in the daily life of the empire, rather than on the significant battles, assassinations, and other major military and political events. As part of his attempt to understand Rome's decline he considers changes over time, basing his analysis on such details as the number of authors published, the quantities of imports from various parts of the empire to Rome, and the number of charitable foundations. MacMullen then presents these unusual categories of quantitative evidence graphically. In a fourteen-page section at the beginning of the book, labeled "Quantifying Decline," he employs eleven figures, most of them bar graphs. Look, for example, at Figure 12.1, a graph of the changes in import patterns through the various periods of the Roman Empire (MacMullen 12). The graph shows evidence of a sharp decline in agricultural products brought from Italy to Ostia and Rome while agricultural imports from Gaul (modern France) and Tunisia (northern Africa) increased. So the details teach us (1) that Italy's farming weakened while farming in other parts of the empire strengthened and (2) that we cannot think of the Roman Empire as a single uniform entity—there were significant regional differences. Having decided to focus on patterns of everyday events instead of great dramatic events, MacMullen chooses the kind of quantitative detail that scientists focus on when they study minute patterns. He adapts his use of detail to the focus and purpose of his historical sociology and develops, in his words, a "quantified database."

Psychiatry has been, in recent decades, a fundamentally scientific enterprise, and the "Brief Communications" section in the *American Journal of Psychiatry* typically publishes short research articles in the scientific IMRAD format. The title of one article, however, tells us that it is not a conventional piece. In "'Can We Talk?' The Schizophrenic Patient in Psychotherapy" the author, an unidentified schizophrenic, tells the story of her experience in psychotherapy. She does not use statistical data, as the audience of this journal is used to, but chooses detail appropriate to her purpose—anecdotes, quotations from conversations, descriptions of events in her life, and so on. The details often include jargon: the author talks of

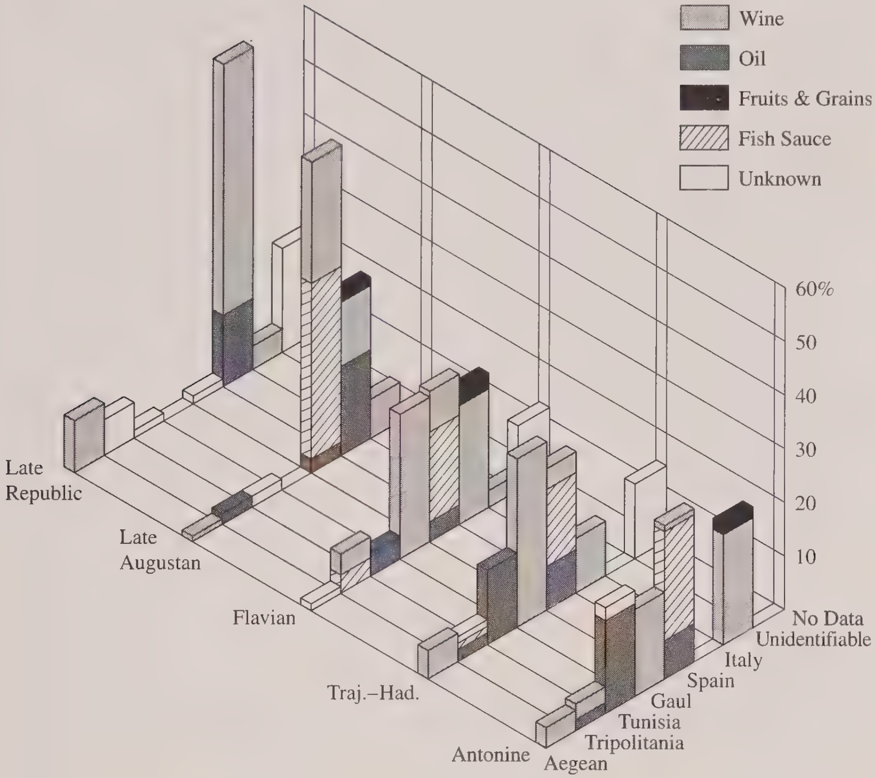


Fig. 9. Import patterns to Ostia and Rome (a)

FIGURE 12.1. *Graphic detail in the humanities.*

how therapy helped her to develop an "observing ego." She thus identifies herself as an "insider" in the field, someone knowledgeable enough to be worth reading, but she adapts her choice of detail appropriately and does not try to make her use of detail match that in the journal's other articles by dragging in any artificial scientific data.

You may remember the article on violence in hockey that I talked about in an earlier chapter. The authors create a playful tone in this serious article about a game. In the body of the article the details are tabulated statistics, including measures of their statistical significance—the normal kinds and amounts of detail in social science research (the article is printed in the *American Journal of Economics and Sociology*). In the Conclusion, the authors first offer a set of three rather straightforward final points. Then, however, they add a separate section in which they humorously answer the possible criticism that they should not write about hockey since they have never played it. They base their answer on the following "evidence" of their credibility:

> First, to supplement our basic research for this project (which already includes decades of watching *Hockey Night in Canada*) we tried to establish a more specific ambience by: watching . . . the movie *Slapshot* all the way through, again; viewing . . . the videos *Great Pro Hockey Fights, Parts I and II;* and reading . . . the autobiography of at least one NHL "goon," Dave Schultz's *The Hammer: Confessions of a Hockey Enforcer* (1981) being the book of choice. (Jones, Ferguson, and Stewart 77)

Those few details reestablish the silly tone that was set in the beginning of the article and that makes it stand out as being unusual. But the unconventional detail also serves a point: The contrast between the scientific authors' playfulness and players' violence heightens the implicit criticism of that violence.

Nurses and Writing across the Disciplines

Toulmin, Rieke, and Janik, in *An Introduction to Reasoning,* discuss the effectiveness of objective, factual evidence in the sciences, but they also explain that

> in many fields of experience, by contrast, our ability to present and argue for our opinions depends rather on our capacity to recognize complex patterns . . . of features. . . . This is largely the case in . . . aesthetics and literary criticism, where the critic may have to master and explain the subtleties of a richly organized canvas or a complex plot; and also in clinical medicine, when it comes to putting together a whole collection of small signs and symptoms and arriving at a defensible diagnosis. (272–73)

This is one of the reasons that writing in the clinical practice of nursing offers such a wide array of adaptations of various disciplinary traditions. But nursing goes beyond hybridizing the traditional uses of detail in the natural sciences and humanities. The titles of just a small sample of professional journals reflect the broad range of approaches that nurses take in their writing: *Nursing Research,* the *Journal of Psychosocial Nursing, Journal of Nursing Education,* and *Nursing Management.* In other words, at one time or another nurses use detail in ways similar to professionals in all of our four large disciplinary groups.

Natural Sciences We begin with the obvious: Nurses are medical scientists, and they conduct and publish the kind of research practiced in the natural sciences. In a recent issue of *Nursing Research* is an article titled "Intestinal Transit and Body Weight Responses to Ovarian Hormones and Dietary Fiber in Rats." That title, along with the first sentence of the Abstract ("A two-part experimental design was used to study the effects of ovarian hormone cessation, hormone supplementation, and dietary fiber composition on body weight, appetite, and intestinal transit"), quickly informs us that we are reading a natural science study. The data, however, are not simply presented in support of a hypothesis or to suggest further studies. Rather, they "suggest a therapy" (Bond, Heitkemper, and Jarrett 23). Almost all the writing of nurses adapts itself to the *practical* goals of the profession (see the section on "Practicality" below).

Social Sciences Sociological studies also seem part of the natural habitat of nurses. In the same issue of *Nursing Research* in which the preceding example appears we find "Drug Combinations and Potential for Risk of Adverse Drug Reaction Among Community-Dwelling Elderly." It presents the statistical results of interviews of almost seven hundred elderly people "living in community settings and managing their own health care." The article is built on an IMRAD format and reports both qualitative and quantitative data. Its findings again support recommendations for nursing practice:

> If practitioners [nurses] are told by elderly clients that they are taking certain categories of drugs, . . . practitioners should be alerted to the need for a more detailed drug history. (Pollow et al. 48)

Humanities In addition to the fact that qualitative social science writing shares features of writing with the humanities (interpretation of the things people say and do, for instance), nurses also sometimes employ more fully humanistic written forms—and the detail that is appropriate for such forms.

Evidence that a nurse often looks at the details of his or her professional life with the eyes of a humanist appears in many articles in nursing journals. The *American Journal of Nursing* contains a section on "The Nursing Life." One piece that appeared there recently ("All in a Day's Leisure") tells the story of a nurse's day off and how she kept catching herself *nursing* people. It gives examples of things she said and did—cautioning one man not to play with medications, noticing that a softball player had something wrong with his right arm—in order to make the point that nursing was what she was, not just what she did (Brady 45).

Business I devote the largest amount of time to nurses' business writing because that is the kind of writing that might seem least likely for a nurse to compose, and thus the kind that would require the greatest adaptation.

Nurses often write for the purpose of facilitating decisions—decisions about diagnoses and treatments. In this sense, writing in nursing is like writing in business and thus follows some of the guidelines for using detail in business. Some of the writing by and for nurses has an explicitly business focus. An article on "Ergonomics in the Laboratory Environment" (in *Nursing Management*) details the important considerations for placing video display terminals (about 20 degrees below eye level and 24 to 28 inches away from the user's eyes) in order to increase *productivity* in nursing labs. The article even discusses the details of new laws regulating the uses of video terminals (Ala, Ala, and Bagot).

Other, more typical, kinds of writing that nurses practice also share features of business writing. "Charting" is a good example, and it is a type of writing that nurses practice every day. You probably have seen medical shows on TV wherein the resident physician starts screaming, "Who's been keeping this patient's chart?" and then blames some nurse for his near-fatal mistake. Charting refers to a variety of records that are kept for a patient. Each hospital produces its own forms, but most of these forms are built on a problem-solving model (another similarity to business writing). A form used by a large hospital in my city lists various physical and psychological systems (e.g., nutrition, activity, elimination). It also gives room to make objective and subjective comments on each system, to state the "Problem" and the "Interventions and Results" and, finally, to evaluate the "Goals and Outcomes." You can see how much of the language sounds like that which we encounter in business writing.

Nurses' charting also resembles business writing in that it must communicate to several different audiences. Many different nurses and doctors read the charts in order to diagnose problems, select treatments, and monitor responses to treatment. Medical students read charts as part of their training, medical researchers may use the information in charts to conduct research projects, and lawyers use the information to prosecute and defend medical workers in the courts. The variety of audiences means that detail must be concise (charts are written in incomplete sentences, using hundreds of standardized abbreviations), precise and complete (missing or imprecise detail could jeopardize a patient's life), and readable (each of the various audiences must be able to quickly access and understand the information they need, so organization and clarity are essential).

A similar form is called a progress report, which often takes the form of a "SOAP note" (*s*ubjective comments, *o*bjective comments, *a*ssessment, and plan). Again the focus is on providing the detail necessary to quickly and accurately assess problems and to make recommendations that will help an audience to make a decision—exactly the nature of business writing.

One major journal, *Nursing*, offers a monthly feature called "Charting Tips" (all of the following examples appear in 1995 issues). Many of the articles in this feature discuss what details should or should not be included in charts. In one of the "Charting Tips," titled "Avoiding the Charge of Defamation," the author advises against including any accusatory, nonobjective statements such as "The patient is an alcoholic"; such comments could be grounds for a libel suit. When "Documenting a 'Harmless' Medical Error," such as an overdose of medication, nurses should not attempt to detail the causes of the error. Instead, they should record facts such as name and dosage of the medication, time administered, patient's response, name of the attending physician and when he or she was notified, and so forth—just the facts. Another "Tip" includes suggestions on when to quote a patient. Don't record a patient's complaining, "I'm going to sue you," because that might "add credence . . . if the patient did sue." Nurses should, however, write down statements that could help with diagnosis and treatment. My favorite of the author's examples is "I don't need to be in the hospital; I have magical powers." Once again you see that the authors emphasize detail that is sensitive to legal complications and that records objective facts for decision making and later analysis.

Practicality In virtually every type of writing that nurses compose there is a practical emphasis. The final section of many research articles in nursing is titled "Clinical Applications and Implications." The how-to articles that take up most of the space in the main nursing journals (*Nursing*, *American Journal of Nursing*, and others) rely on factual detail about biological processes and chemical effects of drugs, statistical detail about patient responses to treatments, anecdotal detail about ethical questions, and quantitative detail about legal and financial matters. These are the kinds of detail used in the natural and social sciences, the humanities, and business—all turned to practical purposes.

In the *American Journal of Nursing* there is a section of short (less than one page) articles called "Research for Practice." In a study of how effectively a new type of bed reduces the number of bed sores in hospitalized patients, the final sentence summarizes the focus and detail:

> Although these beds are expensive, it is clear that they have the potential to actually *reduce costs* . . . as well as *enhance quality of life* and *provide effective therapy*. . . . (Ketts 53)

The three items that I italicized seem to represent, respectively, the business, humanistic, and scientific points of the article.

Adapted details such as these serve the purpose of making nurses better practitioners; in other words, the specialized purposes of the discipline drive its need to adapt.

CAUTIONS

In adapting any of the traditions—in focus, style, organization, format, or detail—of another discipline, writers run the risk of making bad decisions simply because they do not know enough about the other discipline. When they are adapting detail, such cross-disciplinary ignorance can be especially dangerous. If you are just learning to write literary criticism, you might think, "How can I go wrong adding statistics? They're just facts." But our discussion of statistics in Chapter 11 and Cynthia Crossen's book *Tainted Truth: The Manipulation of Fact in America* showed how wrong even the experts can go. On the other hand, statisticians who imitate literary critics' use of quotations to make interpretive conclusions can similarly trample on conventions that they do not understand.

Elsewhere in this book I have argued that knowledge about writing is tacit—the traditions become deeply ingrained through long experience of reading and writing in a discipline, but even then one might not be fully aware of or able to explain them. This may be more true about choosing kinds and amounts of detail than of any other choice that writers make.

If writers who are experienced in a discipline often cannot offer clear answers to what kinds and amounts of detail are appropriate, you can imagine how difficult it is for an outsider to expertly and wisely adapt uses of detail from an unfamiliar discipline. I am not telling you to avoid such adaptations; one of the main points of this book is that unique situations will *compel* you to adapt. What I am saying is that details have immense power and influence—readers remember the details. Respect that power and study the use of detail in other disciplines before you adapt hastily.

Exercise 12.1 Adapting Detail

Select a paper that you have written and in which you used details effectively. Now imagine that you must rewrite the paper for two other audiences, with a different purpose for each. For example, imagine that you start with a paper for a business class, in which you had analyzed the customer-service policies of a local department store. You could then conceive of two alternate versions of the paper. One could be written for a company's personnel department; it could be a sociological study of interactions between employees and customers, for the purpose of guiding the training of employees. Another could be written for architects redesigning the store, a sort of engineering analysis of how the physical space in the customer-service department functions.

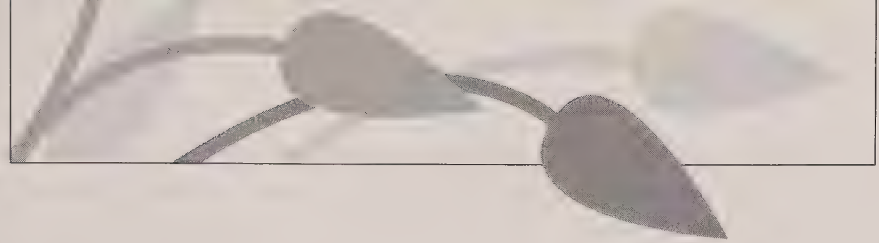
After establishing the two different audiences and purposes, explain what kinds of detail you would use for each and how the detail was adapted specifically for the audience and purpose of each paper. Supply a copy of your original paper as well.

Part Four Conclusion

The variety of information about detail in this chapter reduces to a few fairly simple points. Detail may be the most essential and least understood part of successful writing. While it is impossible to give precise guidelines about the kinds and amounts of detail to use in any given situation, we can say that your writing will stand or fall on the strength of your choices about detail.

When choices are difficult and complex, you need to consider your options fully before choosing. This means that effective choices of kinds and amounts of detail begin with thorough research. I sometimes hear a student say something like, "I'm just about finished with my paper. I know what my thesis is and the main points I want to make; I just need to find a few examples for each point." When I hear this, I fear the worst. A writer who does not first search the details and learn from them cannot choose them well.

When students ask what kind of and how many examples they should use, I ask them what kind of and how many details it took to convince *them* that their point is accurate, true, clear, or enlightening. Surely writers must offer their audiences at least the kind and amount of support and clarification that they needed. But a writer cannot use this guideline unless he or she has first conducted the research, the painstaking and convincing investigation of detail.



PART FIVE

Format: Crafting the Right Look

BEFORE YOU WERE ABLE TO UNDERSTAND ANY OF THE WORDS YOU heard, and long before you could read words, you learned to decipher visual messages: a smile, a pair of open arms reaching for you, the image of someone testing the temperature of your feeding bottle on an outstretched forearm. You developed a working knowledge of how to derive meaning from visual messages; in other words, you developed a **visual literacy.** As you got a little older, you learned to put on a cross face and pucker your mouth as a sign that you did not want to eat your strained carrots. You acquired a working knowledge of how to use visual messages to impress and persuade; in other words, you acquired skill in **visual rhetoric.**

The primary method of communication among people with sight is visual communication, and good writers learn to maximize visual communication in their written documents. Doing that involves both visual literacy—your assumptions about what visual messages your audience will understand—and visual rhetoric—your craft in using visuals to impress and persuade. The general term we will use to denote the visual nature of a document is *format.*

In most introductory writing courses, students encounter little if any consideration of the visual features of their writing. Many students in first-year composition courses are surprised if they are allowed to use such visual aids as graphs and diagrams, and few think about the ways that their choices of type fonts, margins, italics, and so on can enhance their communication.

Computer technology is, of course, changing all of that. Computers give you the ability to change fonts, use boldface and italicized type, even create fancy graphs and illustrations. You are among the first students with the technology to write college papers that take advantage of a wide range of possibilities for visual communication. Consequently, you face yet another set of questions, and consequent choices, in addition to those posed in the first four parts of this book. The main question is simply

- What should my paper look like?

That question breaks down into subquestions:

- How can the overall look of a paper help me to accomplish my purpose?
- How can I use specific visual features such as headings and headers to sharpen focus and clarify organization?
- How can I use specific visual features such as italics, boldface, and bullet points to enhance individual words and sentences?
- How should I choose among, construct, and incorporate graphic aids (tables, graphs, diagrams, and so forth)?

Here in Part 5 we will not move through separate sections on the four large disciplinary groups—as we did in Parts 1 through 4. One reason is that I want you to see various format options—traditions in the disciplines—next to each other and thus better understand their differences and the reasons for those differences. I also want to recognize the fact that the visual character of texts is now, thanks to graphic options made possible by computers, changing, and you should not assume that the traditional look of texts will remain as it is—even until you are on the job market. Interactive texts, for example, in which the reader can decide how a text is to look and to be read, may be common in a very short time; and you may be doing much, if not most, of your reading on a computer screen.

You will almost certainly be doing most of your writing on a computer and will have at your fingertips the ability to create a variety of formats, effective new ways of using visual features to improve your communications.

Part 5 focuses, then, on options for visual communications and on the recognition that choices among graphic options—the same as choices among options for focus, style, organization, and detail—must serve the audience and purpose of each individual document.

In our discussion of "Fundamentals" in Chapter 13 we will consider some of the basic elements and techniques of visual communications. The discussion of "Traditions" in Chapter 14 will review the variety of conventions that writers in the disciplines have developed for such visual features as fonts, headings, tables, and figures. And in Chapter 15, "Adaptations," we will look at examples of visual formats and discuss the choices and limitations that you will face as you learn to manipulate the immense potential of graphics.

13

Fundamentals: Some Principles of Visual Communications

In previous "Fundamentals" chapters we have talked about the kinds of fundamentals that are typically taught in introductory composition courses. The visual basics taught in such courses are these: one-inch margins on all four sides, double-spacing, paragraphs indented five spaces (or about one-half inch) and block quotes indented ten spaces (or about one inch). In order to develop a richer sense of your options, we will turn to some basic principles of visual communications.

Adding concerns about visual communication to our thinking about writing is not really a great leap into new territory. The reading of texts *is* visual. Each letter in our alphabet is a visual symbol for a set of sounds; when we do not recognize a word that we are reading, we look at the individual letters and "sound it out" to see if we can translate the visual symbols and the sounds they designate into a word that we have heard. Each individual letter carries little information, but together the letters convey a meaningful message.

Pictograms are symbols that represent the words they stand for more directly than letter symbols; they are symbols that recreate some key feature of our visual experience (Figure 13.1). Each symbol carries information efficiently; we immediately recognize a bird, water, and a boat. Even children

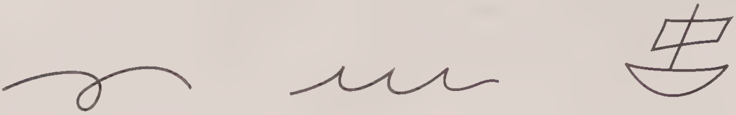


Figure 13.1. *Pictograms.*

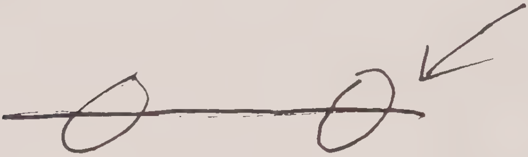
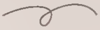


Figure 13.2. *Pictionary clue.*

who cannot read could probably recognize these symbols because they duplicate basic visual features that we learn from our experience in the world. Think of how long it might take you to get someone to guess that you are thinking of the word *bird* without using that word. Compare that to the time it takes to recognize the symbol  for a bird.

If you have played "Pictionary," you probably know how quickly we derive fairly complex meaning from the simplest visual clues. I once saw a young woman draw the illustration in Figure 13.2 for her mother. She began by drawing the straight line, added the two slanted circles, and then slashed in the arrow. Almost the instant that she finished the arrow, her mother correctly guessed the word *engine.* The pair of slanted circles triggers the idea of a car and its forward motion, and the arrow reminds us of what is in the front end of a car. The picture is a wonderful example of the economy of visual communication.

You should recognize two points: First, we are all experienced in translating simple visual symbols into meaningful messages. Second, we do this very efficiently; visual communication is, in fact, the fastest, most efficient form of communication. A picture, as you know, is worth a thousand words.

Of course it requires some skill and training to consistently create clear and clever graphic messages. Figure 13.3 reproduces some name tags from a book on visual communications; students created these to convey certain characteristics of their identity (Wilde 20–21).

Our ability to comprehend these visual messages may seem natural, but the artists' ability to create them grows out of careful study of visual communications. You cannot take advantage of the efficiency of visual commu-

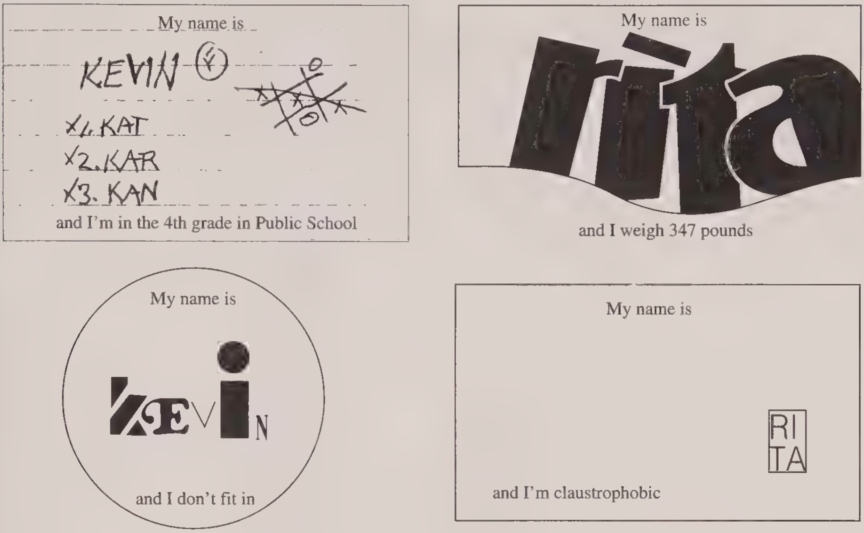

My name is
KEVIN
X1. KAT
X2. KAR
X3. KAN
and I'm in the 4th grade in Public School
My name is
rita
and I weigh 347 pounds
My name is
KEVIN
and I don't fit in
My name is
RI
TA
and I'm claustrophobic

FIGURE 13.3. *Identity cards.*

nications without first knowing the options available to you and then understanding the effects those options are likely to have on an audience.

OPTIONS: THE ELEMENTS OF VISUAL COMMUNICATIONS

Much of the following information on elements and techniques of visual communication is gathered from *A Primer of Visual Literacy*, by Donis A. Dondis, and "The On-Line Visual Literacy Project," which updates Dondis's work in an electronic format.

Dots, Lines, and Shapes

The simplest visual elements are dots, lines, and shapes, which we use in simple writing tasks. A dot may focus our attention on an item in a bulleted list; a set of dots equally spaced across the page and set off on a line by itself can create a break in a text. A set of dots visually fuse into a line, which can separate sections of text or indicate motion and direction—as in an upswinging line on a graph. Just as dots fuse into lines, lines join to form shapes, such as the box in Figure 13.4, which demonstrates a common tech-

The circle, square, and triangle are the most basic shapes.

FIGURE 13.4. *Boxed text.*

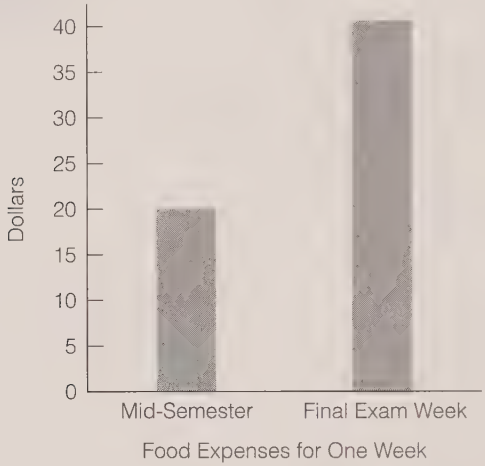


FIGURE 13.5. *Scale in a bar chart.*

nique by which shapes can add emphasis. Furthermore, the visual plan of written texts is based on simple shapes—squares and rectangles. We write on a rectangular page, and our margins create a rectangle within the page. It is all very regular, predictable, and traditional.

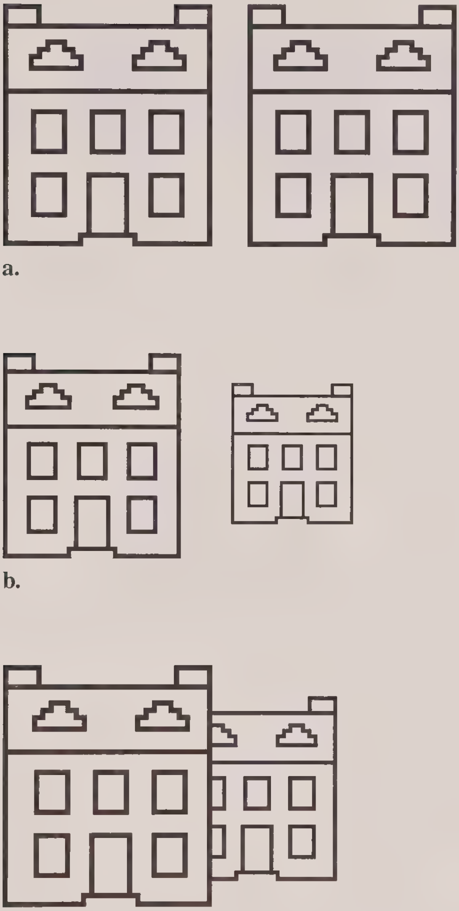
The visual elements that we will now discuss are, except for color, created by merging dots, lines, and shapes; yet they are such important features of visual communication that they are considered elements themselves.

Scale and Dimension

Scale expresses *relationships* among items in a visual field. Those relationships appear in size differences. When we look at two bars in a bar chart, we see their relationship—whether similar or different (Figure 13.5).

Scale also creates the appearance of depth, of three dimensionality. You should see increasing degrees of depth in the three illustrations (A, B, and C) in Figure 13.6.

When designing the visual characteristics of a graph or a page of text, you can use scale to convey harmony or imbalance among the parts. Even



a.

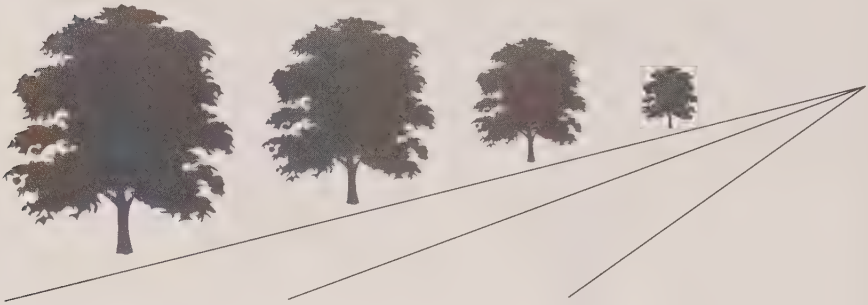
b.

c.

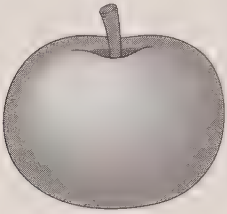
FIGURE 13.6. *Dimension.*

the visual blocks created by paragraphs on a page can evoke balance if the paragraphs are roughly the same length, or imbalance if they are not. When a student has proposed three equally important main points and has written one long and two short paragraphs, I might hold the paper up at a distance of five or six feet and ask the student to look at the relative sizes of the paragraphs. The imbalance of importance among the three points becomes immediately visible.

Dimension is also created by linear perspective and shading (Figure 13.7). The appearance of dimensionality is more dramatic and eye-catching than a flat look, and computers can easily generate three-dimensional



Perspective



Shading

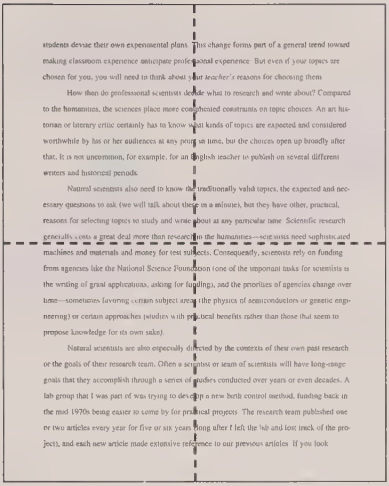
FIGURE 13.7. *Dimension through perspective and shading.*

graphs (later we will talk about the advantages and disadvantages of three-dimensional graphs).

Direction and Movement

When we see a visual field, such as a page of a document, it conveys a sense of direction to us, influencing the way we scan it. The typical page is balanced around a vertical and a horizontal axis, and our eyes follow these axes, top to bottom and right to left (Figure 13.8). A book with parallelogram pages and diagonal text would probably confuse us (Figure 13.9). But the sense of movement in Figure 13.9 could be useful if you wanted to throw a reader off balance.

Dimension can also be used to effect an illusion of direction and movement (Figure 13.10). The same principle could be put to work to give a graph a tone of positive movement, using three-dimensional pictographs of, say, freight trains for the columns of a bar graph of increasing profits. However, you should also note that the attempt to bias objective data in this way might verge on a breach of ethics.



students devise their own experimental plans. This change forms part of a general trend toward making classroom experience anticipate professional experience. But even if your topics are chosen for you, you will need to think about your *teacher's* reasons for choosing them.

How then do professional scientists decide what to research and write about? Compared to the humanities, the sciences place more complicated constraints on topic choices. An art historian or literary critic certainly has to know what kinds of topics are expected and considered worthwhile by his or her audiences at any point in time, but the choices open up broadly after that. It is not uncommon, for example, for an English teacher to publish on several different writers and historical periods.

Natural scientists also need to know the traditionally valid topics, the expected and necessary questions to ask (we will talk about these in a minute), but they have other, practical, reasons for selecting topics to study and write about at any particular time. Scientific research generally costs a great deal more than research in the humanities—scientists need sophisticated machines and materials and money for test subjects. Consequently, scientists rely on funding from agencies like the National Science Foundation (one of the important tasks for scientists is the writing of grant applications, asking for funding), and the priorities of agencies change over time—sometimes favoring certain subject areas (the physics of semiconductors or genetic engineering) or certain approaches (studies with practical benefits rather than those that seem to propose knowledge for its own sake).

Natural scientists are also especially directed by the contexts of their own past research or the goals of their research team. Often a scientist or team of scientists will have long-range goals that they accomplish through a series of studies conducted over years or even decades. A lab group that I was part of was trying to develop a new birth control method, funding back in the mid-1970s being easier to come by for practical projects. The research team published one or two articles every year for five or six years (long after I left the lab and lost track of the project), and each new article made extensive reference to our previous articles. If you look

FIGURE 13.8. *Visual axes.*

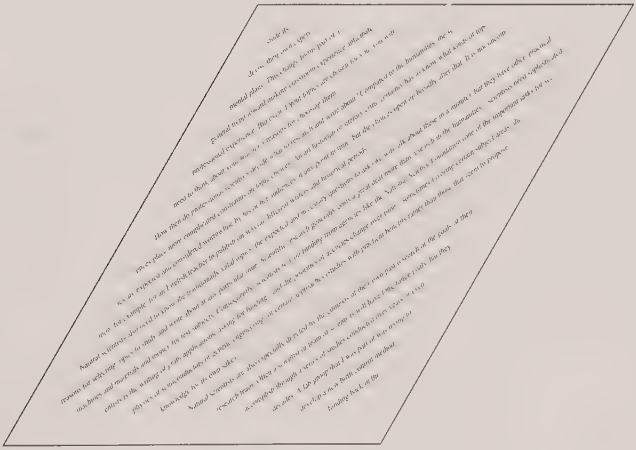


FIGURE 13.9. *Imbalanced page.*

Tone and Texture

These elements lend depth of character to a visual message. Tone is constructed through differences in lightness and darkness—shading. As we saw in Figure 13.7, shading can lend character by adding dimension. Even computer word-processing programs often allow you to add shading to objects (enclosed boxes, for example) and thus enhance their effect.

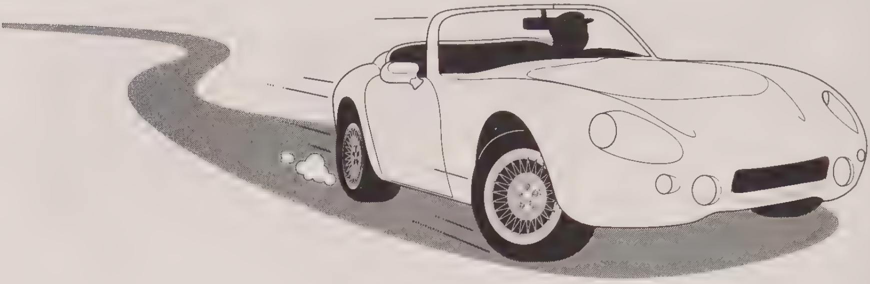


FIGURE 13.10. *Direction and movement.*

Texture is the visual means of creating an illusion of touch; the look of rough and smooth surfaces can enhance the meaning of a visual message. A baby-food advertisement, for example, would probably want to stay away from rough, grainy images.

Color

Color, though obviously a powerful visual element, has not been something that students and even most professional writers had to learn to use because they simply have not had the option of adding color to documents. Again, computers are changing that; "presentation" software (programs used to create fancy graphs, tables, and "slides") all use color; and color printers are becoming affordable even for home use. All of these changes mean that you should add knowledge of color to your visual communications toolbox even if you will not be using it in most papers that you submit for your classes.

You need to understand color in terms of hue, saturation, and brightness (also known as value). *Hue* refers to the variety of colors—red, yellow, blue, purple, magenta, ochre, and so on. *Saturation* denotes the relative "purity" of a color; saturated colors are simple and straightforward compared to the gray, muted, uncertain shades of unsaturated colors. *Brightness* is the intensity of light, the degree of lightness or darkness in a color.

Your own experience of colors will give you the best examples of their potential to carry visual meaning. We all know that blues are cool, reds are hot, and reddish-brown wood hues are cozy. I still remember a book that my mother read to me when I was a small child—not because of the story, but because of the somber (unsaturated, dark) colors that made the story seem sad.

Exercise 13.1 Recognizing Visual Elements

Select two samples of professional prose, perhaps articles from journals in the academic disciplines (you have collected some of these from the library for earlier exercises in this book). Also select two articles from popular magazines—those that you might find on the shelf of the checkout lane at a grocery store. Identify as many uses of simple visual elements (dots, lines, shapes, scale and dimension, direction and movement, tone and texture, and color) as you can in each of the four samples. Compare the kinds and numbers of visual elements in the academic and the popular articles. Photocopy pages from the articles as examples of your findings.

OPTIONS: THE TECHNIQUES OF VISUAL COMMUNICATIONS

The two primary techniques are contrast and balance. These terms carry both literal and metaphorical meaning.

When writing, you create a literal contrast of visual items on a page. All written documents use contrast—usually dark letters contrasted against a light background. Pale yellow letters on a beige background would be extremely hard to read because there is not sufficient contrast between the two colors. On public signs, sharp-edged, simple images provide the contrast that makes them easy to read at a glance (Figure 13.11).

You can also create a visual field that is balanced. A page with one-inch margins on all four sides balances on its vertical and horizontal axes. A page can also be balanced with unequally sized items. Just as three little children can balance one parent on a teeter-totter, the page in Figure 13.12 balances the letters of regular text on the right with the emphatic letters of the headings on the left (a typical format for a résumé).

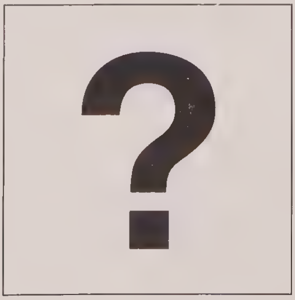
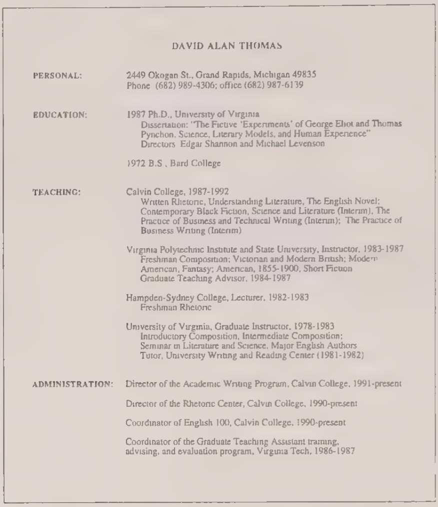


FIGURE 13.11. *High-contrast sign for an information booth.*



DAVID ALAN THOMAS

PERSONAL: 2449 Okogan St., Grand Rapids, Michigan 49835
Phone (682) 989-4306; office (682) 987-6139

EDUCATION: 1987 Ph.D., University of Virginia
Dissertation: "The Fictive 'Experiments' of George Eliot and Thomas Pynchon. Science, Literary Models, and Human Experience"
Directors Edgar Shannon and Michael Levenson

1972 B.S., Bard College

TEACHING: Calvin College, 1987-1992
Written Rhetoric, Understanding Literature, The English Novel; Contemporary Black Fiction, Science and Literature (Interim), The Practice of Business and Technical Writing (Interim); The Practice of Business Writing (Interim)

Virginia Polytechnic Institute and State University, Instructor, 1983-1987
Freshman Composition; Victorian and Modern British; Modern American, Fantasy; American, 1855-1900, Short Fiction
Graduate Teaching Advisor, 1984-1987

Hampden-Sydney College, Lecturer, 1982-1983
Freshman Rhetoric

University of Virginia, Graduate Instructor, 1978-1983
Introductory Composition, Intermediate Composition; Seminar in Literature and Science, Major English Authors
Tutor, University Writing and Reading Center (1981-1982)

ADMINISTRATION: Director of the Academic Writing Program, Calvin College, 1991-present

Director of the Rhetoric Center, Calvin College, 1990-present

Coordinator of English 100, Calvin College, 1990-present

Coordinator of the Graduate Teaching Assistant training, advising, and evaluation program, Virginia Tech, 1986-1987

FIGURE 13.12. *Balance between unequal items.*

Contrast and balance are also terms that can be understood metaphorically. Visual techniques can evoke emotional and intellectual responses that surprise, jar, disrupt expectations; in other words, these techniques contrast with the normal and expected. Other techniques rely on the normal and expected to convey a sense of harmony and calm—a sense of balance. Often a literal and metaphorical sense of balance work together; the page with one-inch margins is balanced, and its normal look assures us with the metaphoric message that nothing odd is going on.

You will sometimes need to disrupt and sometimes harmonize your readers' responses, so you should familiarize yourself with many options and their effects. We begin with techniques for balance because they will help us to understand what a reader's eye expects; then we will move on to contrast and sample some techniques that challenge and frustrate those expectations.

Balance

When we look at a visual field such as a page, we subconsciously overlay horizontal and vertical axes on it (Dondis calls these "felt axes"). We situate a page of text, scanned top to bottom and left to right, on axes that divide the page. We set an object on a horizontal base balanced on a vertical axis (Figure 13.13).

Even an object as simple as a dot can appear balanced or unbalanced.

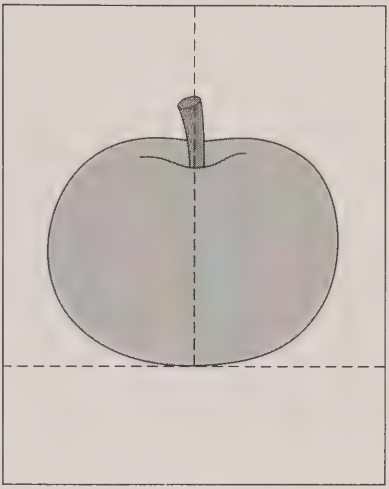


Figure 13.13. *"Felt axes" and balance.*

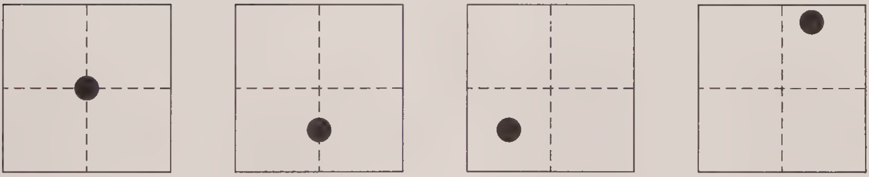


Figure 13.14. *"Felt axes," balance, and imbalance.*

The first two diagrams in Figure 13.14 show dots comfortably balanced on axes; the dot in the third diagram feels only slightly unsteady because it sits on a diagonal axis and at the center of the lower left-hand corner; the fourth, however, shows an unmoored dot that troubles our visual sense a bit.

A page that is out of balance is one that fails to conform to our expectations, and such visual expectations carry over from one page to another. The various headings and subheadings in this book tell you where the sections and subsections begin and end; the headings at the same level (the main sections, for example, "Fundamentals," "Traditions," and "Adaptations") must look like one another. You rely on them for information about the organization of a chapter, and you expect the balance of that regularity.

Graphic aids in professional texts offer a sense of calm authority, in part, because they are emphatically balanced on horizontal and vertical axes (Figure 13.15).

Another aspect of balance deals with the *relationship* between visual items. The principle is this: Likes attract, and opposites repel. Our eyes

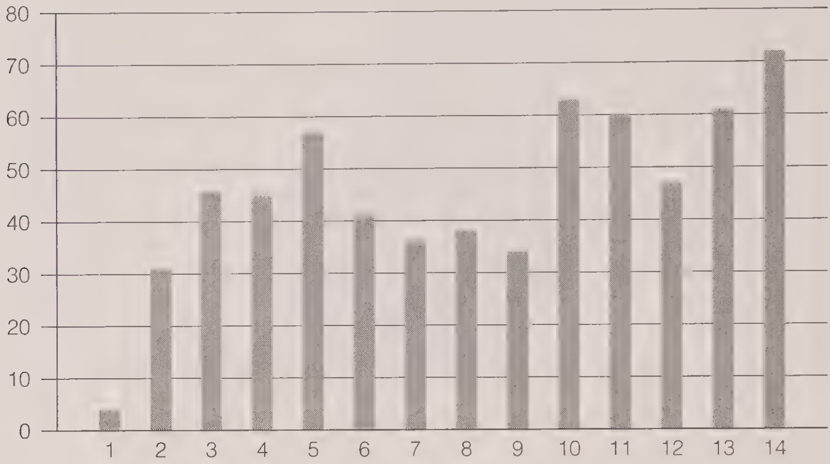


FIGURE 13.15. *Balance and authority.*

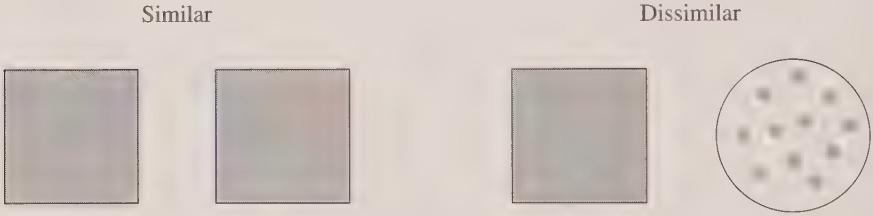


FIGURE 13.16. *Attraction and opposition of visual items.*

draw together two similar items and separate dissimilar items (Figure 13.16).

Consider the concept of balance applied to the design of a page from a scientific article. The two samples in Figure 13.17 are both nicely balanced. The two columns of text provide some of the balance. The single graphic at the bottom of 13.17A sets squarely on the horizontal and vertical axes. The two graphics in 13.17B are balanced on the axes of the page as well as being similar in appearance, so they attract one another and enhance the balance. The fact that these likes attract can cause problems in 13.17B; the two graphics may be seen as a pair when in fact they are from two different sections (Methods and Results); thus, the balance created by likes attracting could create some confusion.

Most professional and academic writing emphasizes balance because it conveys a sense of authority and rationality. Most professional writers would,

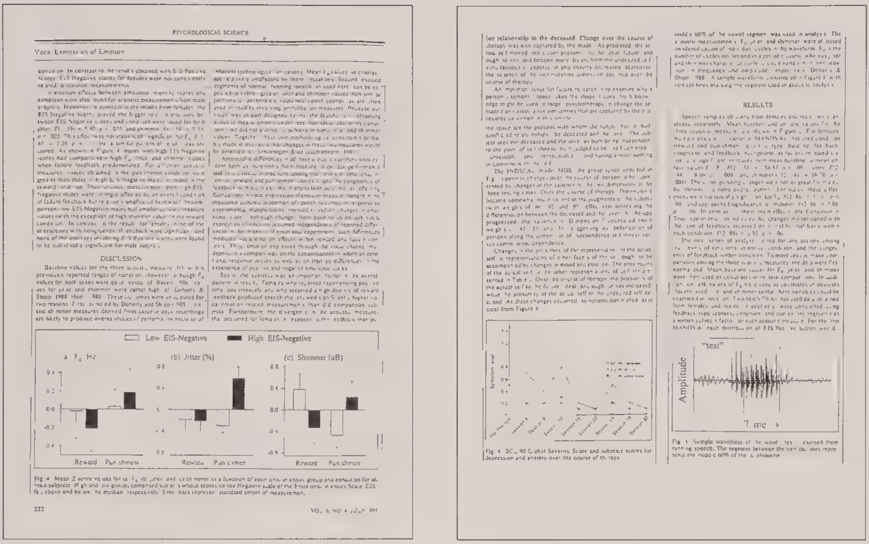


FIGURE 13.17. *Balance in Scientific Formats.*

after all, prefer being seen as balanced rather than unbalanced. However, for a high-energy visual impact, contrast offers the better techniques.

Contrast

The variety of literal and metaphorical techniques of contrast create the most powerful visual communications. Surprise catches our attention more than predictability. An item or group of items located on an axis of a page gains attention because they are where they are supposed to be, but an item located where it is clearly *not* supposed to be will attract even more attention. Look at Figure 13.18, which shows the same four diagrams that were in Figure 13.14. The dot in the fourth diagram drags our eyes away from the comfortable positions of the first three diagrams. That dot may bother us because it seems out of place, but the fact that it bothers our eyes also explains why it so forcefully catches our eyes.

Imagine readers' surprise the first time that someone pulled a quote from a page, enlarged it, and put it in a box in the middle of the page (for example, see Figure 13.4). That is now a very common technique; desktop publishing programs make it simple to do. But even though common, it is still visually irregular and is almost certainly the first thing that a reader will look at on such a page.

When a graphic appears on a page of a paper, even if it is a regular-

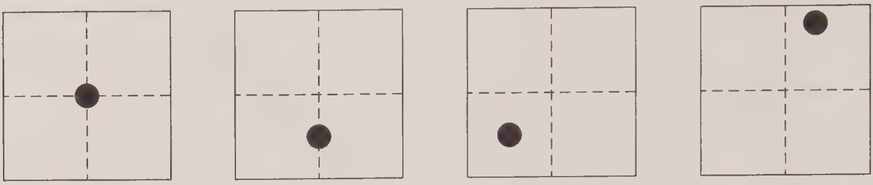


FIGURE 13.18. *"Felt axes," balance, and imbalance.*

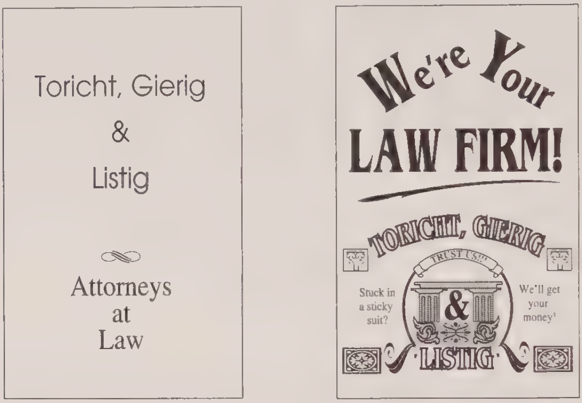


FIGURE 13.19. *Professional and playful signs.*

looking table or figure, it still is different from the text that takes up most of the space in the paper; it contrasts with the regular text and thus draws attention to itself. From your own experience you know that when you page through a magazine or book, the charts, tables, photographs, and other graphics catch your eyes much more strongly than the printed words of normal text.

Any visual technique that challenges our sense of what is normal and expected utilizes contrast. Scattered lines rather than patterned lines; a distorted, unrealistic photograph rather than a realistic photograph; a complex, exaggerated, intricate image rather than a simple, understated, plain image: all of these options create strong visual responses through contrast.

However, you must be sure that the strong response serves the *purpose* of carrying the appropriate message. The effectiveness of contrast as a visual technique makes it tempting to use all that power, but the visual message must support the purpose. A highly contrastive technique can generate a great deal of attention and at the same time convey the wrong information. Sometimes a student using a word-processing program will decide to play with the fonts, as in this sentence, printed in "Chili Pepper" font.

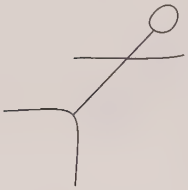


FIGURE 13.20. *An ambiguous visual message.*

Unless there is a message to be communicated by the odd font choice, it simply makes the writer look foolish. A sign on the door of the law firm of Toricht, Gierig, and Listig should make the firm appear reliable and professional, not immature and prankish (Figure 13.19). The second example would be the kind of visual message you would want to create in an advertisement for a party. Its contrast is highly energetic and spontaneous, but absurd for a law office.

Clarity in Visual Messages

The examples of signs on a law-office door each convey a clear message. One is appropriate and one is not, but they are both clear: One says that the lawyers are professionals; the other says that they are clowns. Visual messages need that kind of clarity of purpose. Consider the following stick figure (Figure 13.20). What does the figure convey? Is it falling over, communicating imbalance; or is it skating, communicating a forward movement that balances it? Our eyes process complex data very rapidly, and it is therefore economical to use visuals, but they must be drawn with care for a clear purpose.

Exercise 13.2 Analyzing Visual Techniques

In Exercise 13.1 you identified visual elements. Now you will analyze how the elements are used to create the various effects of contrast and balance (or imbalance). Find at least two techniques in each article that you think are effective. Explain what the techniques are and why you think they work well (that is, how they help to accomplish the purpose of each article for each audience). Finally, select a recent piece of your own writing. Compare its use of visual elements and techniques to those of the published articles. What might you do differently if you could revise to improve your visual communications? Supply photocopies to demonstrate the points you make.

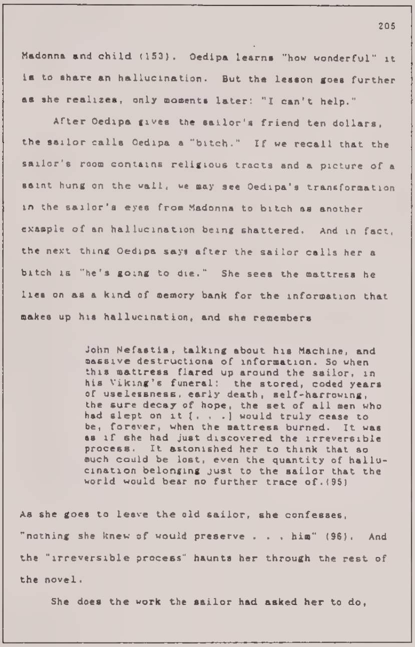
14

Traditions in the Disciplines: Format

In this chapter we turn to the particular format choices that writers in the various disciplines typically make, options with which you are probably familiar: fonts, headings, tables, graphs, and so on. In the recent past many of these choices were available to neither students nor professionals. Only the designers of books and journals chose which font to use and how headings should look. Now, however, computers allow you to take advantage of most of the possibilities available to professional designers; consequently, you need to train yourself to make those choices wisely. As you read this chapter, remember that visuals convey a great deal of information; one of the surest ways to make your message confusing is to get carried away, using too many different kinds of visuals and creating chaos.

Many of the options that follow are used by writers across the disciplines, and I say little in this chapter about disciplinary differences. Each discipline does, nevertheless, have a distinctive traditional look. Reproduced in Figure 14.1 are pages from several different documents. They are small enough that you will not be able to read the words; you should, however, be able to tell which of the four disciplinary groups each sample represents (A, humanities; B, natural sciences; C, social sciences; D, business).

We will now consider some of the choices that will help you to achieve the traditional visual formats in the disciplines.



205

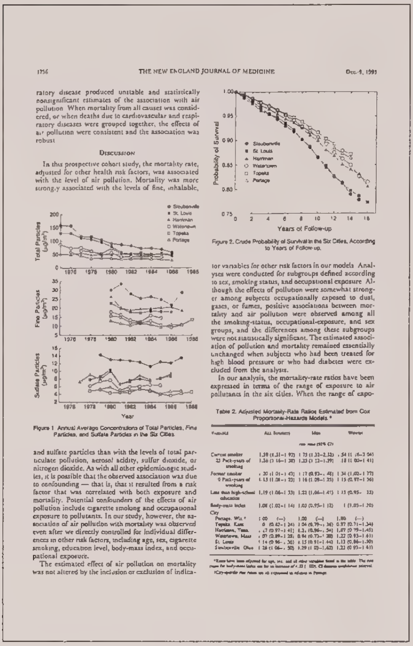
Madonna and child (153). Oedipa learns "how wonderful" it is to share an hallucination. But the lesson goes further as she realizes, only moments later: "I can't help."

After Oedipa gives the sailor's friend ten dollars, the sailor calls Oedipa a "bitch." If we recall that the sailor's room contains religious tracts and a picture of a saint hung on the wall, we may see Oedipa's transformation in the sailor's eyes from Madonna to bitch as another example of an hallucination being shattered. And in fact, the next thing Oedipa says after the sailor calls her a bitch is "he's going to die." She sees the mattress he lies on as a kind of memory bank for the information that makes up his hallucination, and she remembers

> John Nefastis, talking about his Machine, and massive destructions of information. So when this mattress flared up around the sailor, in his Viking's funeral: the stored, coded years of uselessness, early death, self-harrowing, the sure decay of hope, the set of all men who had slept on it [. . .] would truly cease to be, forever, when the mattress burned. It was as if she had just discovered the irreversible process. It astonished her to think that so much could be lost, even the quantity of hallucination belonging just to the sailor that the world would bear no further trace of.(95)

As she goes to leave the old sailor, she confesses, "nothing she knew of would preserve . . . him" (96). And the "irreversible process" haunts her through the rest of the novel.

She does the work the sailor had asked her to do,



1756 THE NEW ENGLAND JOURNAL OF MEDICINE Dec. 9, 1993

ratory disease produced unstable and statistically nonsignificant estimates of the association with air pollution. When mortality from all causes was considered, or when deaths due to cardiovascular and respiratory diseases were grouped together, the effects of air pollution were consistent and the association was robust.

DISCUSSION

In this prospective cohort study, the mortality rate, adjusted for other health risk factors, was associated with the level of air pollution. Mortality was more strongly associated with the levels of fine, inhalable, and sulfate particles than with the levels of total particulate pollution, aerosol acidity, sulfur dioxide, or nitrogen dioxide. As with all other epidemiologic studies, it is possible that the observed association was due to confounding — that is, that it resulted from a risk factor that was correlated with both exposure and mortality. Potential confounders of the effects of air pollution include cigarette smoking and occupational exposure to pollutants. In our study, however, the association of air pollution with mortality was observed even after we directly controlled for individual differences in other risk factors, including age, sex, cigarette smoking, education level, body-mass index, and occupational exposure.

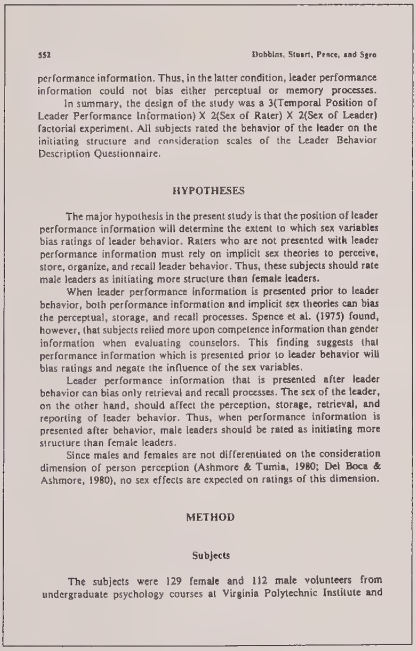
The estimated effect of air pollution on mortality was not altered by the inclusion or exclusion of indicator variables for other risk factors in our models. Analyses were conducted for subgroups defined according to sex, smoking status, and occupational exposure. Although the effects of pollution were somewhat stronger among subjects occupationally exposed to dust, gases, or fumes, positive associations between mortality and air pollution were observed among all the smoking-status, occupational-exposure, and sex groups, and the differences among these subgroups were not statistically significant. The estimated association of pollution and mortality remained essentially unchanged when subjects who had been treated for high blood pressure or who had diabetes were excluded from the analysis.

In our analysis, the mortality-rate ratios have been expressed in terms of the range of exposure to air pollutants in the six cities. When the range of expo-

Figure 1. Annual Average Concentrations of Total Particles, Fine Particles, and Sulfate Particles in the Six Cities.

Figure 2. Crude Probability of Survival in the Six Cities, According to Years of Follow-up.

Table 2. Adjusted Mortality-Rate Ratios Estimated from Cox Proportional-Hazards Models.*



552 Dobbins, Stuart, Pence, and Sgro

performance information. Thus, in the latter condition, leader performance information could not bias either perceptual or memory processes.

In summary, the design of the study was a 3(Temporal Position of Leader Performance Information) X 2(Sex of Rater) X 2(Sex of Leader) factorial experiment. All subjects rated the behavior of the leader on the initiating structure and consideration scales of the Leader Behavior Description Questionnaire.

HYPOTHESES

The major hypothesis in the present study is that the position of leader performance information will determine the extent to which sex variables bias ratings of leader behavior. Raters who are not presented with leader performance information must rely on implicit sex theories to perceive, store, organize, and recall leader behavior. Thus, these subjects should rate male leaders as initiating more structure than female leaders.

When leader performance information is presented prior to leader behavior, both performance information and implicit sex theories can bias the perceptual, storage, and recall processes. Spence et al. (1975) found, however, that subjects relied more upon competence information than gender information when evaluating counselors. This finding suggests that performance information which is presented prior to leader behavior will bias ratings and negate the influence of the sex variables.

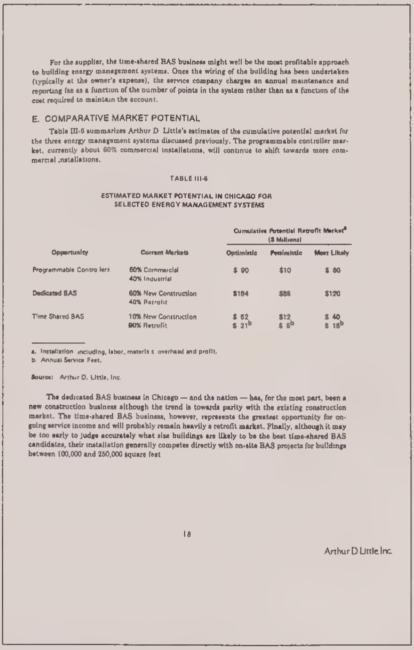
Leader performance information that is presented after leader behavior can bias only retrieval and recall processes. The sex of the leader, on the other hand, should affect the perception, storage, retrieval, and reporting of leader behavior. Thus, when performance information is presented after behavior, male leaders should be rated as initiating more structure than female leaders.

Since males and females are not differentiated on the consideration dimension of person perception (Ashmore & Tumia, 1980; Del Boca & Ashmore, 1980), no sex effects are expected on ratings of this dimension.

METHOD

Subjects

The subjects were 129 female and 112 male volunteers from undergraduate psychology courses at Virginia Polytechnic Institute and



For the supplier, the time-shared BAS business might well be the most profitable approach to building energy management systems. Once the wiring of the building has been undertaken (typically at the owner's expense), the service company charges an annual maintenance and reporting fee as a function of the number of points in the system rather than as a function of the cost required to maintain the account.

E. COMPARATIVE MARKET POTENTIAL

Table III-6 summarizes Arthur D. Little's estimates of the cumulative potential market for the three energy management systems discussed previously. The programmable controller market, currently about 60% commercial installations, will continue to shift towards more commercial installations.

TABLE III-6

ESTIMATED MARKET POTENTIAL IN CHICAGO FOR SELECTED ENERGY MANAGEMENT SYSTEMS

		Cumulative Potential Retrofit Market[a] ($ Millions)		
Opportunity	Current Markets	Optimistic	Pessimistic	Most Likely
Programmable Controllers	60% Commercial 40% Industrial	$ 90	$10	$ 60
Dedicated BAS	60% New Construction 40% Retrofit	$194	$86	$120
Time Shared BAS	10% New Construction 90% Retrofit	$ 62 $ 21[b]	$12 $ 6[b]	$ 40 $ 18[b]

a. Installation including, labor, materials, overhead and profit.
b. Annual Service Fees.

Source: Arthur D. Little, Inc.

The dedicated BAS business in Chicago — and the nation — has, for the most part, been a new construction business although the trend is towards parity with the existing construction market. The time-shared BAS business, however, represents the greatest opportunity for ongoing service income and will probably remain heavily a retrofit market. Finally, although it may be too early to judge accurately what size buildings are likely to be the best time-shared BAS candidates, their installation generally competes directly with on-site BAS projects for buildings between 100,000 and 250,000 square feet

18

Arthur D Little Inc.

FIGURE 14.1. *Typical formats of texts in the disciplines.*

CHARACTERS AND SPACES, FONTS, BULLET POINTS, AND TEXT STYLES

Characters and Spaces

Broadly speaking, we choose visual features that make the characters (letters, numbers, punctuation marks, and so on) on our printed pages easily seen, in other words, legible. This section discusses a variety of visual features involving the look of individual characters and the spaces that separate them: scale, contrast, characters per line, spacing between lines, and right justification (much of the information on these features is adapted from Peter Wildbur's *Information Graphics*).

Scale Scale is important because it helps us to distinguish among letters on a page. Large letters make it possible to read selected words with just a glance, so words such as the heading "HYPOTHESES" in Figure 14.1C can be spotted while flipping through a journal article. Scale also affects how we read upper- and lowercase letters. Lowercase letters, because of their variable size (the ascending line on an *h* and the descending line on a *y*, for instance) are easier to read than uppercase letters. A document written in all caps is therefore hard to read.

Contrast As opposed to our discussion of contrast in Chapter 13, here the word *contrast* denotes only the literal contrast between the color of the letters on a page and the page itself, which influences both legibility and eye fatigue. We simply cannot see black letters on a dark purple screen. It is also the case that our eyes tire more quickly reading white letters on a black page than black letters on a white page, even though the contrast is the same in both.

Number of Characters The number of characters on a line of text also affects our ability to read. Either too few or two many words on a line can tire our eyes. The optimal number of words per line is about ten, but books and journals often have to put more words than that on a line because they cannot afford the amount of space required to spread the words out more. For that reason, many journals and books will use pages with two or even three columns of print per page. These double and triple columns allow an optimal number of words per line and lots of words per page. For your writing try to select a font size that will produce ten to twelve words per line.

Spacing Spacing between lines can also be too large or too small. The standard double-spaced page, creating about twenty-five to twenty-seven lines per page, is highly readable. Using this spacing and a font that allows ten to twelve words per line, you will end up with roughly 250–300 words per page, a reasonable and readable convention.

Justified Text The term *right justified* refers to pages on which all the words on the right-hand margin line up. Justification can create uneven spacing between words, which in turn causes the line to be harder to read than if it were not justified. I have always told my students to avoid right justification, but the more sophisticated word-processing programs automatically even out the spacing, so justification is not the problem that it once was, and you may be able to create documents that, like most professional texts, are right justified.

Fonts

Perhaps the best general rule to follow when selecting a font is to read journals published in your discipline to see if there is a font that most of them use. Your basic choice is between a font with and without serifs. Serifs are the little lines and curls added to the basic letters, like the short horizontal lines on the top and bottom of a letter *l*. Look at the difference between fonts with and without serifs:

A A 5 5

Figure 14.2 gives you samples of fonts with and without serifs, as well as some unusual fonts; the font names are in parentheses. The size of characters (letters, numbers, and symbols such as asterisks) is measured in "points." All of the samples are twelve-point characters, and you can see that different fonts are sized differently; consequently, if you change fonts but want to keep all characters the same size, you may have to change the point size.

Probably the two most important guidelines for choosing fonts are these:

1. Fonts with serifs are preferred when an audience is expected to read through extended sections of text, and fonts without serifs are chosen for short groups of words, for reading done at a glance.

Serifs seem to make longer groups of words easier for the eye to connect, and plain fonts make it easier to recognize words and numbers quickly.

2. Do not mix too many fonts. In a long document (10+ pages) you might successfully use one font for your headings, one for your regular text, and one for your graphics and block quotations. But do not complicate your reader beyond that without very good reason.

Here are some samples of fonts with serifs. (Times)
Here are some samples of fonts with serifs. (Bookman Light)
Here are some samples of fonts with serifs. (Palatino)
Here are some samples of fonts with serifs. (Aldus Roman)

And fonts without serifs. (Avant Garde Book)
And fonts without serifs. (Gill Sans Light)
And fonts without serifs. (Helvetica Light)
And fonts without serifs. (News Gothic Roman)

There are also many unusual fonts. (Linotext Roman)
THERE ARE ALSO MANY UNUSUAL FONTS. (BANCO)
There are also many unusual fonts. (New Berolina)
THERE ARE ALSO MANY UNUSUAL FONTS. (ANNA)

FIGURE 14.2. *Font samples.*

Bullet Points

The term *bullet point* helps us to understand the impact, the way readers' eyes are drawn to the sharp visual crack of a bullet point, which uses the most basic visual element—a dot—and the most forceful visual technique—contrast—for its emphasis. You can find examples of bullet points in the list of questions given in the beginning of each of the five main parts of this book.

I once heard a talk given by a businessperson to a business-writing class. The person who spoke concentrated on only a few main topics; one of them she titled

- Bullets
- Bullets
- Bullets

Her point was that business writing should offer concise and accessible information, and bullets are among the important tools of business writers because they help them to achieve conciseness and accessibility. Bullet points are extremely effective in situations wherein you must catch your audience's attention and offer them a simple, easy-to-read list—a summary of main points, a list of key pieces of information, a list of central questions, and so on. And, of course, these kinds of situations may arise in disciplines other than business.

Another feature of bullet points is that they confer equal status on each item that they target. A numbered list imposes priorities—item 1 is more important than item 2, and so on; readers may therefore pay less attention to the later items on a numbered list. Numbers also imply steps of a process, again imposing an order of importance. A bulleted list directs equal attention to each item.

Text Styles

Word processors offer many text-style options in addition to "plain text." Typical choices include *italics,* underlining, **boldface**, outline, and shadow.

The use of italics is governed by the conventions of "mechanics"; italics designate titles, words referred to as words (as in "Try to use the word *absquatulate* in a sentence"), and words in languages other than English. More commonly they *emphasize* a word or group of words. Underlining is the equivalent of italics; that is, you can substitute underlining in any of the situations that require italics. Underlining can also, as can italics, be used to highlight a heading; a horizontal line running beneath a heading is an effective visual indicator of a new section.

Boldface is used to lend emphasis. It commonly highlights headings, lists, and key words. Do not use boldface when italics are called for. Italics used within a sentence changes the way a word *sounds* in the mind of a reader. Boldface draws special attention to the importance of a word, but it does not dramatically change the way the word sounds.

In general, you should avoid excessive highlighting. When you emphasize too much, you create the effect of yelling at your reader; everything becomes loud, and the key items that deserve emphasis get lost in the noise.

Be especially careful about using styles such as "outline" and "shadow"; these are almost never seen in professional writing. Remember that every choice you make contributes to the image of yourself that you present to your audience; using a computer as if it were a toy will make you seem like a kid with a toy.

Exercise 14.1 Analyzing and Designing a Variety of Visual Features

Find a sample of professional writing from a discipline that you are considering for your major. Also select a sample of your own writing (preferably but not necessarily written for a course in the same discipline as your professional sample). Compare the visual choices of spacing, font, text styles—all of the features discussed in the preceding section—as well as any other visual features that affect the look of individual words and sentences.

After explaining the visual differences between your own writing and your professional sample, redesign your own document. What features of the professional sample would you imitate and why? What features would you avoid and why?

As you plan your design, imagine that you are trying to create some particular image of yourself as the writer (conservative, rebellious, serious, playful . . .). You might even exchange papers with other students in your class; the class could describe the image of the author of the sample they were given; you can then see if the image you intended comes through to your readers.

VISUAL MARKS OF ORGANIZATION: VISUAL DIVIDERS, HEADINGS, HEADERS AND FOOTERS, AND WHITE SPACE

Visual features such as fonts and text styles enrich the communication of individual words and groups of words, but visual techniques can also reveal the overall structure of a document.

Visual Dividers

Visual clues announce divisions between sections, and they can do so subtly or boldly. The following examples demonstrate a range from quiet to loud methods for announcing a new section in a text.

1. A number or letter, corresponding to a number or letter of an outline, at the beginning of a new paragraph:
   This is the last sentence of one section.
   B. This is the first sentence of a new section.

2. An extra space between sections:
   This is the last sentence of one section.

   This is the first sentence of a new section.

3. An extra space, filled with a line of asterisks, between sections:
   This is the last sentence of one section.
   * * * * * *
   This is the first sentence of a new section.

4. An extra space between sections and a heading for the new section:
   This is the last sentence of one section.

   New Section Heading
   This is the first sentence of a new section.

5. An extra space between sections and a highlighted heading for the new section:
   This is the last sentence of one section.

   New Section

   This is the first sentence of a new section.

Starting a new section on a new page will make these markers even more emphatic. You can imagine endless combinations to effect the level of attention that you desire.

Because there are so many different ways to visually mark sections of a paper, you can choose a different method for each level of division into smaller and smaller subsections. In this book the parts have the most eye-popping visual markers; as the text moves into smaller and smaller subdivisions, the visual markers of those subdivisions become less and less visually emphatic. Readers count on these markers to help them find sections, so it is essential that the same visual marker be used for the same level of subdivision throughout a document.

In business and other disciplines wherein readers jump around from section to section and do not usually read straight through a document, the section markers must be especially clear and predictable. We have earlier seen that scientists jump around the various sections of a traditionally organized IMRAD paper. They expect headings that announce the "Methods," "Results," and so forth; those headings allow them to quickly find the section they want to read. In the humanities—in an article of literary criticism, for instance—authors provide only subtle section markers, if any at all, because they expect their readers to read each section in the order it is presented and thus not to need highly visible marks of organization. The latest edition of the Modern Language Association [MLA] handbook mentions headings only once, and very briefly at that. In other words, make your choices of visual features based on your knowledge of the traditions in your discipline and your readers' expectations.

Headings

Headings very quickly tell a reader how many sections and subsections make up a document, and they identify the content of each part—as in the "Methods" and "Results" headings in the sciences. In disciplines that regularly use headings strong traditions have evolved. The *Publication Manual of the American Psychological Association* (the guide to APA style and the most commonly used style guide in the social sciences) offers precise instructions for headings. It identifies five levels of headings.

CENTERED, ALL UPPERCASE LETTERS	*Level 5*
Centered, First Letter of Important Words in Uppercase	*Level 1*
Centered, Underlined, First Letter of Important Words in Uppercase	*Level 2*
Flush Left, Underlined, First Letter of Important Words in Uppercase	*Level 3*
Indented, underlined, lowercase for all but the first letter of the first word, and ending with a period.	*Level 4*

The top level indicated above is designated Level 5 rather than Level 1 because it is rarely used; in most cases only four levels of headings are necessay, and the choice of which form to use depends on how many levels there are. In a paper with two levels, only Levels 1 and 3 are used.

Results *Level 1*

Data from Survey of College Students *Level 3*

In a paper with three levels, use Levels 1, 3, and 4.

Results *Level 1*

Data from Surveys of College Students *Level 3*

Data from the 1980 survey. *Level 4*

When four levels are designated, use Levels 1, 2, 3, and 4.

Experiment 2 *Level 1*

Results *Level 2*

Data from Surveys of College Students *Level 3*

Data from the 1980 survey. *Level 4*

Word-processing programs make it easy to test the consistency of your headings. Simply make an extra copy of a whole document; then erase everything but the headings, retaining the indents and spaces before and after the headings. The remaining text should form a good outline, with every same-level item sharing the same look. And remember that the grammatical consistency of your headings (as discussed in Chapter 5) will help them to look alike. For example, three headings outlining the parts of a subsection could all be nouns:

Headings
Headers
Footers

The headings should not vary in form. The three headings below do not take advantage of grammatical or visual similarity to help readers recognize that they outline the three parts of one subsection.

Headings
Why Should You Use Headers?
Using Footers

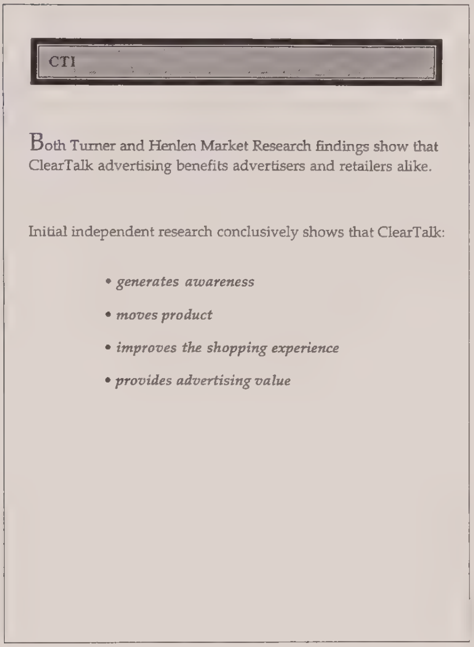
Headers and Footers

A header is a line of text at the top of the page, a footer, obviously enough, at the bottom. They may contain a chapter title, a section or subsection heading, the author's name, the page number, or a combination of such items. In a book or magazine, where pages are printed on both sides, headers and footers could present a chapter title on even-numbered pages and section headings on odd-numbered pages. They help a reader by making it possible to simply flip through a text, looking only at the upper corner, for instance, to find a section. Even while reading normally through a text, if a reader loses his or her place, a header or footer can quickly reorient.

White Space

White space is just what the words say—the empty space on a page. It is the space in the margins and between lines. The fewer words, numbers, and so forth on a page, the more each is framed in white space and the more attention each gets. White space can thus command increased attention for the information on a page. Look at a page from a business report on the product I have, in earlier chapters, been calling ClearTalk (Figure 14.3). With only a header, an introductory sentence, and a bulleted list on the page, each item carries a great deal of weight.

In Figure 14.3 you also see that both vertical (the left and right margins) and horizontal (the top and bottom margins and the space in between lines of text) white space is extensive. Horizontal space in between sections of the text can emphasize each part, as in Figure 14.3, or it can signal a division between sections. The more white space, the greater the division, so an extra line of space could separate subsections, while an extra blank page could separate chapters. Plentiful vertical white space is useful for adding headings, as in a page from a business report (Figure 14.4).



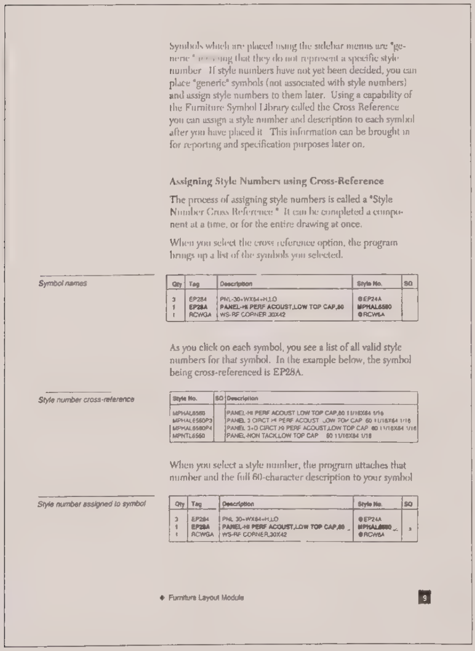
CTI

Both Turner and Henlen Market Research findings show that ClearTalk advertising benefits advertisers and retailers alike.

Initial independent research conclusively shows that ClearTalk:

- *generates awareness*
- *moves product*
- *improves the shopping experience*
- *provides advertising value*

FIGURE 14.3. *White space.*



Symbols which are placed using the sidebar menus are "generic " meaning that they do not represent a specific style number If style numbers have not yet been decided, you can place "generic" symbols (not associated with style numbers) and assign style numbers to them later. Using a capability of the Furniture Symbol Library called the Cross Reference you can assign a style number and description to each symbol after you have placed it This information can be brought in for reporting and specification purposes later on.

Assigning Style Numbers using Cross-Reference

The process of assigning style numbers is called a "Style Number Cross Reference." It can be completed a component at a time, or for the entire drawing at once.

When you select the cross reference option, the program brings up a list of the symbols you selected.

Symbol names

Qty	Tag	Description	Style No.	SO
3	EP284	PNL-30+WX64+H,LO	●EP24A	
1	**EP28A**	**PANEL-HI PERF ACOUST,LOW TOP CAP,60**	**MPHAL6560**	
1	RCWGA	WS-RF CORNER 30X42	●RCW6A	

As you click on each symbol, you see a list of all valid style numbers for that symbol. In the example below, the symbol being cross-referenced is EP28A.

Style number cross-reference

Style No.	SO	Description
MPHAL6560		PANEL-HI PERF ACOUST LOW TOP CAP,60 11/16X64 1/16
MPHAL6560P3		PANEL 3 CIRCT HI PERF ACOUST LOW TOP CAP 60 11/16X64 1/16
MPHAL6560P4		PANEL 3+D CIRCT HI PERF ACOUST,LOW TOP CAP 60 11/16X64 1/16
MPNTL6560		PANEL-NON TACK,LOW TOP CAP 60 11/16X64 1/16

When you select a style number, the program attaches that number and the full 60-character description to your symbol

Style number assigned to symbol

Qty	Tag	Description	Style No.	SO
3	EP284	PNL 30+WX64+H,LO	●EP24A	
1	**EP28A**	**PANEL-HI PERF ACOUST,LOW TOP CAP,60**	**MPHAL6560**	3
1	RCWGA	WS-RF CORNER,30X42	●RCW6A	

◆ Furniture Layout Module 9

FIGURE 14.4. *Vertical white space.*

Exercise 14.2 Analyzing and Designing Visual Marks of Organization

As you did for Exercise 14.1, compare a sample of your own writing to a sample of professional writing from a discipline that you may major in. Compare the techniques that the two samples use to visually highlight organization. In your discussion of the differences, you might include an explanation of why you did not use any visual marks of organization. You should also try to explain why the choices of visual marks in each sample do or do not conform to traditions in the discipline.

After explaining the differences in visual features between the two papers, redesign your own paper. What techniques from the professional paper would you copy and why? What techniques would you choose not to use and why?

GRAPHIC AIDS: TABLES AND FIGURES

In the first two sections of this chapter we have looked at ways of using visual techniques to emphasize individual parts of a text and signal the organization of the text. Now we will look at the broad array of visual items that are added to the text. This section ties in most closely with Part 4; the visual aids discussed here are used to present detail. In most papers written for first-year composition courses, details are placed right next to the generalizations and abstractions that they are clarifying and supporting. They are not typically placed in tables or figures interspersed within the body of the paper, nor are they usually located in appendixes that are placed after the body. The graphic aids discussed here, however, are frequently used in the disciplines because of their efficiency in focusing readers' attention and presenting large amounts of information in a small space.

Among the most important rules for using graphics is that you must integrate them into the text of your paper, and that usually means you should refer to them in the text, offering a basic explanation of the main point(s) of a graphic. But your reader should also be able to understand a table, chart, diagram, and so on without looking to the text for explanation. These seemingly contradictory requirements reflect your audience's needs and reading habits: Readers need an explanation of how your graphic functions in your paper, *and* they often read graphics without reading the whole text.

To help deal with both of these conditions, you should supply a reference number (for example, Figure 1, Table 1, Illustration 1, and so on) and a descriptive title. Make the title no longer than it must be to clearly identify the graphic.

Another general guideline is to try to use only standard abbreviations (%, #, $) that you can expect your readers to know (within a discipline you can expect readers to know some specialized abbreviations). If you must use abbreviations that your readers are not familiar with, explain them, but do not make your readers continually go back and forth between the graphic and the notes that explain it.

The two terms most often used to identify graphics in professional journals and books in the disciplines are *tables* and *figures,* so the remainder of this section is devoted to these two kinds of graphics.

Tables

A table presents a set of data arranged in columns (vertical) and rows (horizontal). Consider the steps you might take to transform a normal sentence into a table. A sentence with a list of parallel items that is reformatted into a bulleted list could be the first step in such a transformation. The two sentences below are hard to read because they contain lists that are long and hard to sort out.

> To move toward the informal, personal end of the stylistic spectrum, use contractions, refer to yourself with the pronoun *I* and to your audience with *you,* and keep your sentences short and simple. Conversely, one effects a more formal style by eschewing contractions, referring to oneself in the third person and avoiding any direct address to one's audience, and constructing lengthy, complicated sentences.

These sentences can be transformed into columns of independent items.

> To move toward the informal, personal end of the stylistic spectrum,
> - use contractions,
> - refer to yourself with the pronoun *I* and to your audience with *you,* and
> - keep your sentences short and simple.
>
> Conversely, one effects a more formal style by
> - eschewing contractions,
> - referring to oneself in the third person and avoiding any direct address to one's audience, and
> - constructing lengthy, complicated sentences.

When we put these bulleted lists side by side, so the individual items can be compared, we create a table. Figure 14.5 simplifies the language of the two sentences and presents the information comparatively in a crude table.

FIGURE 14.5. *Techniques for creating informal and formal tone.*

Informal	*Formal*
Contractions	No contractions
1st- and 2nd-person pronouns	3rd-person pronouns
Short sentences	Long, complex sentences

	ALBANY	ALBUQUERQUE	ATLANTA	ATLANTIC CITY	BALTIMORE	BILLINGS	BIRMINGHAM	BISMARK	BOISE	BOSTON	BUFFALO	CALGARY	CHARLESTON, SC	CHARLESTON, WV	CHARLOTTE	CHEYENNE	CHICAGO	CINCINNATI	CLEVELAND	COLUMBUS, OH	CONCORD	DALLAS	DENVER	DES MOINES	DETROIT
ALBANY	■	2076	1025	276	333	2135	1089	1687	2527	171	295	2447	879	658	792	1797	850	721	475	613	155	1672	1844	1169	549
ALBUQUERQUE	2076	■	1414	1996	1929	990	1259	1161	957	2254	1785	1538	1706	1527	1658	546	1342	1508	1624	1465	2288	654	457	991	1564
ATLANTA	1025	1414	■	335	689	1867	161	1523	2214	1108	923	2191	302	515	243	1488	717	453	774	569	1165	783	1406	979	727
BALTIMORE	333	1929	689	161	■	1990	780	1543	2382	433	381	2534	546	363	456	1656	705	516	371	411	477	1349	1685	1021	532
BILLINGS	2135	990	1867	2110	1990	■	1716	411	634	2181	1827	546	2114	1820	2105	450	1284	1602	1631	1638	2398	1368	553	1007	1573
BIRMINGHAM	1089	1259	161	868	780	1716	■	1479	2097	1192	901	2242	449	535	396	1389	661	455	718	563	1237	637	1297	865	734
BOISE	2527	957	2214	2535	2382	634	2097	1125	■	2509	2241	823	2454	2160	2445	732	1706	1930	2023	2032	2710	1637	331	1359	1965
BOSTON	171	2254	1108	368	433	2181	1192	1834	2509	■	462	2599	971	772	325	1944	996	875	662	767	68	1794	1390	1315	716
BUFFALO	295	1785	923	461	381	1827	901	1412	2241	462	■	2172	891	444	694	1522	543	446	200	338	440	1382	1568	863	265
CHARLESTON, WV	658	1527	515	1297	363	1820	535	1297	2160	772	444	2107	489	■	287	1425	483	205	256	153	806	1141	1375	757	368
CHARLOTTE	792	1658	243	602	456	2105	396	1578	2445	925	694	2623	212	287	■	1765	777	508	541	425	885	1067	1676	1111	621
CHEYENNE	1797	546	1488	1807	1656	450	1389	614	732	1944	1522	998	1787	1425	1765	■	380	1203	1296	1295	1984	911	105	633	1238
CHICAGO	850	1342	717	825	705	1284	661	607	1706	996	543	1597	904	483	777	980	■	290	345	354	1047	937	1023	349	288
CINCINNATI	721	1508	453	595	516	1602	455	1094	1930	875	446	2013	618	205	508	1204	290	■	255	110	927	938	1208	591	268
CLEVELAND	475	1624	774	499	371	1631	718	1150	2023	662	200	2168	743	256	541	1296	345	255	■	147	721	1191	1340	666	173
COLUMBUS, OH	613	1465	569	531	411	1638	563	1159	2032	767	338	2177	647	153	425	1295	354	110	147	■	819	1046	1277	660	209
DALLAS	1672	654	783	1516	1349	1368	637	1252	1637	1794	1382	1885	1083	1141	1067	911	937	938	1191	1046	1838	■	794	714	1239

FIGURE 14.6. *Mileage table.*

More commonly, tables present sets of numbers. You have no doubt seen simple mileage tables in road atlases (Figure 14.6), and you may recall the table of complex statistical data that we looked at in Chapter 11 (Figure 14.7).

A table includes a reference number and title, and it identifies the columns with headings called "column heads" (all of the parts of tables that are discussed in this and the next six paragraphs are shown in Figure 14.8). A column head should not be much wider than the widest item in the column, which means that the head must be brief. It should also be placed directly above the column. If you need to identify two or more columns as a group, use a "column spanner" (see Figure 14.8). Column heads and spanners, just as any headings, should follow a consistent grammatical form.

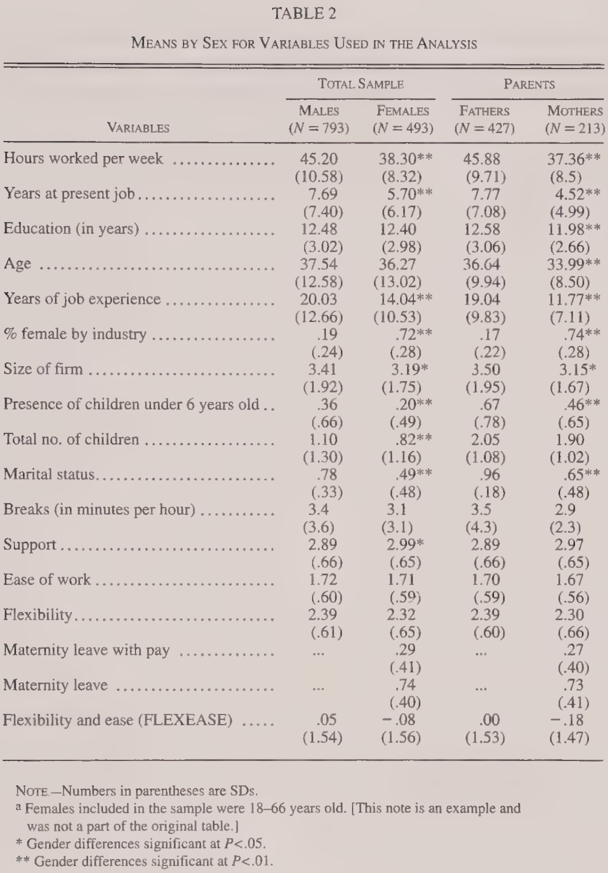


TABLE 2

MEANS BY SEX FOR VARIABLES USED IN THE ANALYSIS

	TOTAL SAMPLE		PARENTS	
VARIABLES	MALES (*N* = 793)	FEMALES (*N* = 493)	FATHERS (*N* = 427)	MOTHERS (*N* = 213)
Hours worked per week	45.20	38.30**	45.88	37.36**
	(10.58)	(8.32)	(9.71)	(8.5)
Years at present job	7.69	5.70**	7.77	4.52**
	(7.40)	(6.17)	(7.08)	(4.99)
Education (in years)	12.48	12.40	12.58	11.98**
	(3.02)	(2.98)	(3.06)	(2.66)
Age	37.54	36.27	36.64	33.99**
	(12.58)	(13.02)	(9.94)	(8.50)
Years of job experience	20.03	14.04**	19.04	11.77**
	(12.66)	(10.53)	(9.83)	(7.11)
% female by industry	.19	.72**	.17	.74**
	(.24)	(.28)	(.22)	(.28)
Size of firm	3.41	3.19*	3.50	3.15*
	(1.92)	(1.75)	(1.95)	(1.67)
Presence of children under 6 years old ..	.36	.20**	.67	.46**
	(.66)	(.49)	(.78)	(.65)
Total no. of children	1.10	.82**	2.05	1.90
	(1.30)	(1.16)	(1.08)	(1.02)
Marital status..........................	.78	.49**	.96	.65**
	(.33)	(.48)	(.18)	(.48)
Breaks (in minutes per hour)	3.4	3.1	3.5	2.9
	(3.6)	(3.1)	(4.3)	(2.3)
Support	2.89	2.99*	2.89	2.97
	(.66)	(.65)	(.66)	(.65)
Ease of work	1.72	1.71	1.70	1.67
	(.60)	(.59)	(.59)	(.56)
Flexibility............................	2.39	2.32	2.39	2.30
	(.61)	(.65)	(.60)	(.66)
Maternity leave with pay	...	.29	...	.27
		(.41)		(.40)
Maternity leave	...	.74	...	.73
		(.40)		(.41)
Flexibility and ease (FLEXEASE)	.05	−.08	.00	−.18
	(1.54)	(1.56)	(1.53)	(1.47)

NOTE.—Numbers in parentheses are SDs.
[a] Females included in the sample were 18–66 years old. [This note is an example and was not a part of the original table.]
* Gender differences significant at $P<.05$.
** Gender differences significant at $P<.01$.

FIGURE 14.7. *Statistical table.*

The column on the far left of a table is the "stub column," and its heading is the "stub head." The stub column identifies the variables, the items for which the table will track changes or differences. The stub column, which essentially provides the context for the table, appears on the left for much the same reason that a sentence begins with old information and then moves to the new. Tables, like sentences, are read from left to right, so the left column is the beginning and thus the appropriate place for contexts.

Columns and rows are also set up so that the data are compared side to side rather than top to bottom. Figure 14.9 is a table designed to compare three teachers; their names head the columns of the table, and they are compared in terms of the three teaching practices (classroom style, grading, homework) denoted in the stub head. If the practices rather than the teachers headed the columns, we would not have the visual ease of side-by-side comparisons of the teachers. The table in Figure 14.10 makes it difficult

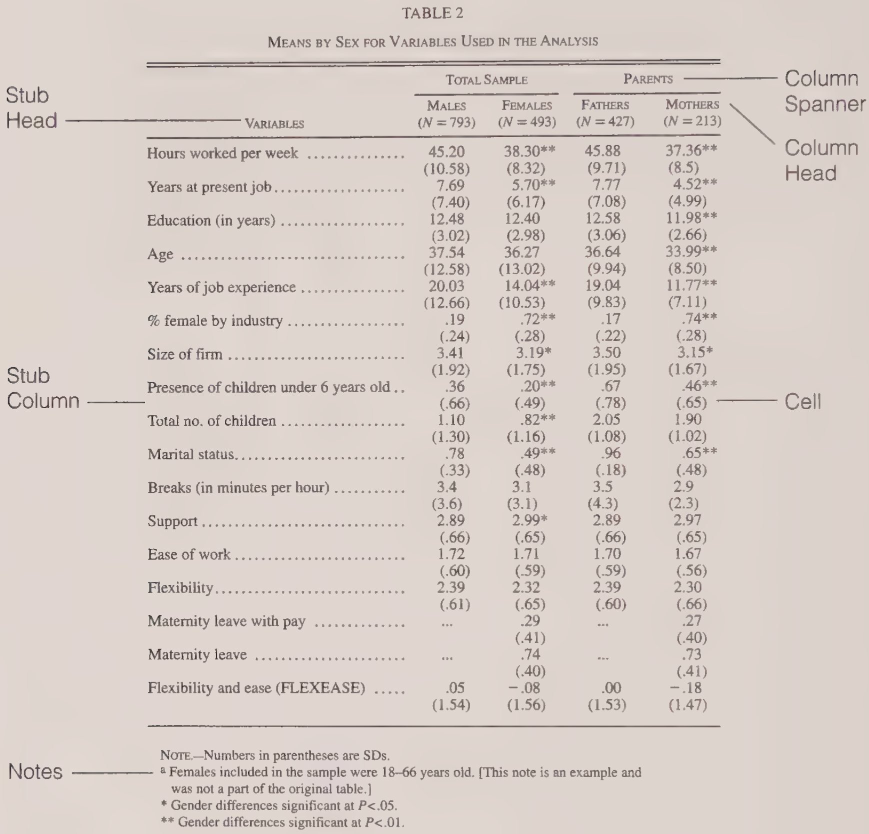


TABLE 2

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Hours worked per week	45.20	38.30**	45.88	37.36**
	(10.58)	(8.32)	(9.71)	(8.5)
Years at present job	7.69	5.70**	7.77	4.52**
	(7.40)	(6.17)	(7.08)	(4.99)
Education (in years)	12.48	12.40	12.58	11.98**
	(3.02)	(2.98)	(3.06)	(2.66)
Age	37.54	36.27	36.64	33.99**
	(12.58)	(13.02)	(9.94)	(8.50)
Years of job experience	20.03	14.04**	19.04	11.77**
	(12.66)	(10.53)	(9.83)	(7.11)
% female by industry	.19	.72**	.17	.74**
	(.24)	(.28)	(.22)	(.28)
Size of firm	3.41	3.19*	3.50	3.15*
	(1.92)	(1.75)	(1.95)	(1.67)
Presence of children under 6 years old	.36	.20**	.67	.46**
	(.66)	(.49)	(.78)	(.65)
Total no. of children	1.10	.82**	2.05	1.90
	(1.30)	(1.16)	(1.08)	(1.02)
Marital status	.78	.49**	.96	.65**
	(.33)	(.48)	(.18)	(.48)
Breaks (in minutes per hour)	3.4	3.1	3.5	2.9
	(3.6)	(3.1)	(4.3)	(2.3)
Support	2.89	2.99*	2.89	2.97
	(.66)	(.65)	(.66)	(.65)
Ease of work	1.72	1.71	1.70	1.67
	(.60)	(.59)	(.59)	(.56)
Flexibility	2.39	2.32	2.39	2.30
	(.61)	(.65)	(.60)	(.66)
Maternity leave with pay	...	.29	...	.27
		(.41)		(.40)
Maternity leave	...	.74	...	.73
		(.40)		(.41)
Flexibility and ease (FLEXEASE)	.05	−.08	.00	−.18
	(1.54)	(1.56)	(1.53)	(1.47)

NOTE.—Numbers in parentheses are SDs.

[a] Females included in the sample were 18–66 years old. [This note is an example and was not a part of the original table.]

* Gender differences significant at *P*<.05.

** Gender differences significant at *P*<.01.

FIGURE 14.8. *The parts of a table.*

to compare teachers because it requires top-to-bottom rather than side-to-side comparisons. These examples should also help you to recognize a potential danger of tables; they can oversimplify complex information, in this case making one teacher seem preferable to the others when there is not enough evidence to make any reliable conclusions about the teachers' merits. These tables parade half-baked, biased generalities in the guise of reliable knowledge.

In the body of a table the items should be of a consistent form; if they are words, they should be in the same grammatical form; if they are numbers, they should be carried out to the same number of decimal places.

The *Publication Manual of the American Psychological Association* stipulates that a table should contain no vertical lines; instead, allow enough space between columns to keep the information distinct. Those APA guidelines also say that horizontal lines should be kept to a minimum, usually one

FIGURE 14.9. *A comparison of three teachers.*

Teaching Practices	*Thomas*	*Williams*	*Howard*
Classroom style	Mumbly lectures	Discussion	Pop quizzes
Average grade given	B−	B+	C+
Homework assigned	Long papers	Short readings	Exercises

FIGURE 14.10. *A comparison of three teachers.*

Teachers	*Classroom Style*	*Average Grade*	*Homework Assigned*
Thomas	Mumbly lectures	B−	Short readings
Williams	Discussion	B+	Exercises
Howard	Long papers	C+	Pop quizzes

line above and one below the column heads and another line at the bottom of the table, before the notes (see Figure 14.8). In a table such as the mileage table in Figure 14.6, where a lot of numbers are cramped in a tight space, more vertical and horizontal lines may be necessary, but in many such cases the lines are a faint pale color. Some graphics experts argue that the more ink used in a graphic, the greater the danger of overloading the reader with information and making the graphic too difficult to read. A thin, pale line helps to keep categories distinct yet keeps the amount of visual stimulus to a minimum.

If there is a "cell" (the word that denotes the places at the intersections of columns and rows where the data is placed) for which you do not have data, insert a dash. Then explain the dash in a note accompanying the table (see the explanation in the next paragraph). If the data for a certain cell are for one reason or another simply inapplicable, leave the cell blank, but your reason for doing this should be clear to your readers.

At the bottom of a table you may include explanatory notes. Begin, if necessary, with a "general note," an explanation of a set of items or conditions in the table. If any particular items require explanation, do this in a "specific note," designated in the body of the table by a lowercase, superscript letter (as in the *a* in the second column of Figure 14.8). If you are presenting data that have been tested for their statistical significance (see Chapter 11), you should also add a "probability note," giving the p-value. P-values are indicated in the body of the table by asterisks. If some data have a different p-value than others, use an additional asterisk to designate each larger value (for example, $^{*}p < .01$, $^{**}p < .001$, $^{***}p < .0001$).

Number of Half-Hour Tutoring Sessions Each Week of the Semester
in the Writing Center, Fall 1995

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Number of Sessions	4	31	46	45	57	41	36	38	34	63	59	47	61	72

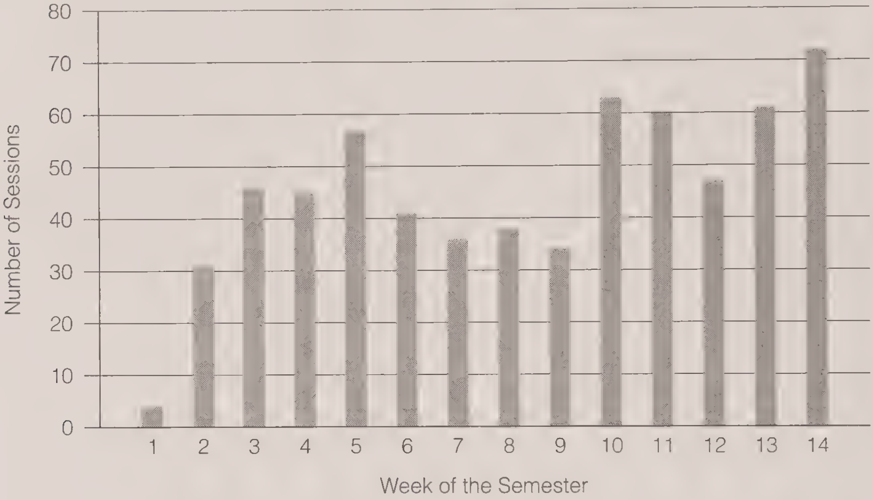


FIGURE 14.11. *A table and a bar chart conveying the same information.*

Journals in the natural and social sciences are more likely to use tables than graphs (a bar chart or pie chart, for example). A graph is better suited to catch a reader's eye and make the information easy to remember, but writers for professional journals assume that they do not need to capture their readers' attention or help them to remember. The table and bar chart in Figure 14.11 show that a table is more concise. In a sales brochure or an oral presentation (which calls for a quick visual communication), the bar chart might be preferred; but for economical, uncluttered presentation of data, tables are indispensable.

If your data is too extensive or complex to present in a graphic, or if your readers require specific figures and not the estimations often supplied by graphics, you should probably choose a table.

Figures

The term *figure* denotes a broad set of options. We will discuss graphs (also called charts), diagrams, and photographs.

Writers have, of course, always used graphics. Leonardo da Vinci's journals remain among the finest examples of well-integrated text and graphics. But the use of the now common graphics such as line graphs and bar charts began during the Industrial Revolution of the late eighteenth and early nineteenth centuries. It was a time of more rapid change than had ever been experienced in human history. It was also a time when belief in the power of objective, statistical science was growing. Statistical information could be used to document, comprehend, predict, and even control change (if one can predict change, one moves closer to controlling it).

Graphics were born out of a need to present large amounts of statistical data in forms that could be processed by readers in a small amount of time and space. Florence Nightingale, the famous Victorian nurse, was among the innovators in graphic communications. She devised complicated pie charts of the causes of death during the Crimean War (1854–56), which she used to show that many more soldiers were dying from preventable disease than from military action.

The three types of graphs that are most commonly used today—the line graph, bar chart, and pie chart—were all invented by the pioneers of statistical graphics, and today's versions look very much like the originals.

Line Graphs A line graph shows a continuous flow of change and is best at demonstrating changes over time. It very effectively helps readers to recognize *trends* (see Figure 14.12). A line graph can be used to plot changes

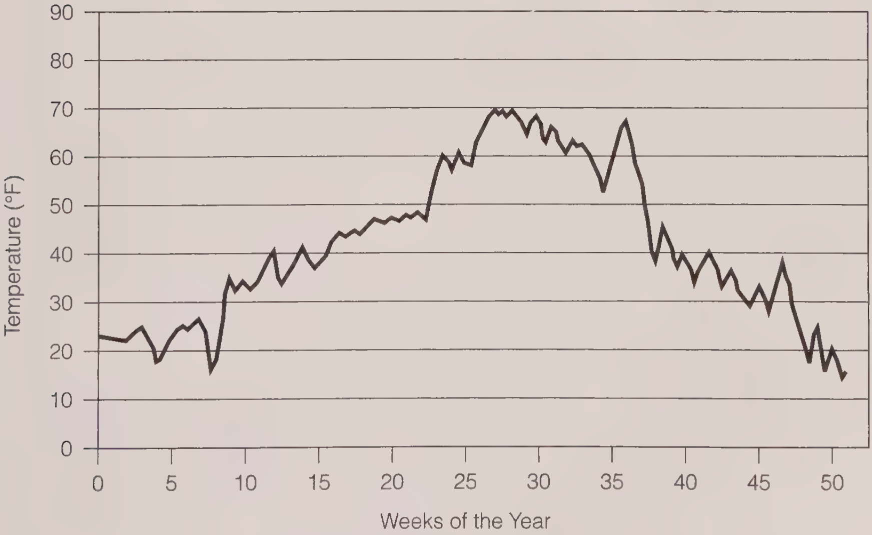


FIGURE 14.12. *Line graph of average daily temperatures.*

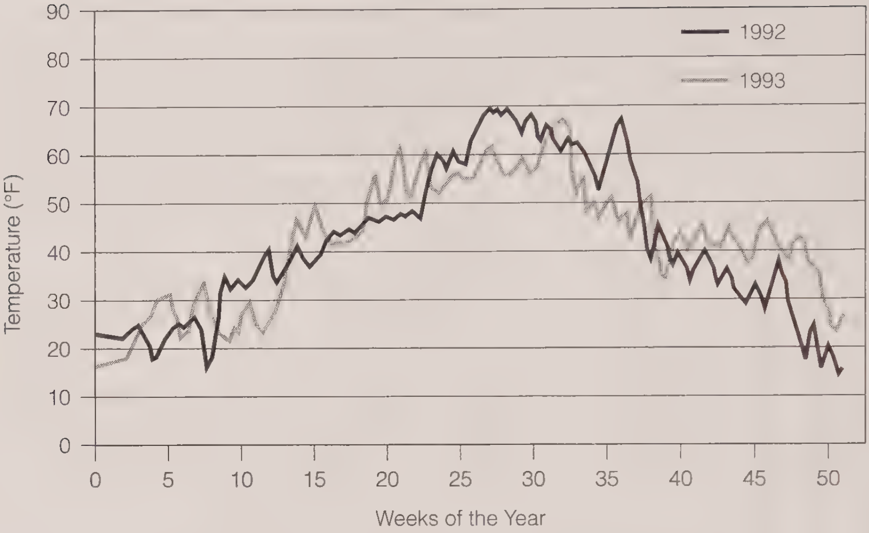


FIGURE 14.13. *Line graph of daily temperatures for two different years.*

in more than one variable, focusing attention on their relationship as well as the trends shown by each independent line (as in Figure 14.13).

A line graph must be kept as simple as possible. Too many variables, grid lines, or headings along the horizontal and vertical axes can clutter and confuse. Two simpler graphs may often be clearer than one excessively complex graph (and this advice applies to all types of graphics). Note also that the title of the line graph appears at the bottom of the graph. Whereas tables are read from the top down and are thus titled at the top, both line graphs and bar charts tend to be read from the bottom up and are labeled accordingly.

Bar Charts While the line graph represents continuous change, a bar chart selects and dramatizes certain sets of points for the purpose of emphasizing discrete quantities themselves and of making simple comparisons among those quantities. A bar chart consequently conveys less information, but more focused, summarized information. Figure 14.14 demonstrates the conversion of the line graph in Figure 14.13 to a bar chart. Each of the columns in the bar chart represents the average of the points on the line for a one-year period. Your eye is not asked to follow the upsweeps and downsweeps of gradual difference, but rather to concentrate on a handful of single, "bottom-line" figures. In other words, if you are a scientist interested in the temperature *changes* from month to month and year to year, you

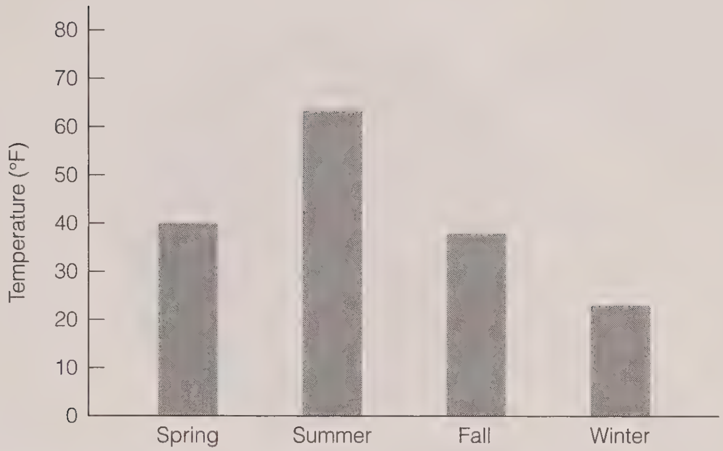


FIGURE 14.14. *Bar chart of seasonal average temperatures.*

would want a line graph. If, on the other hand, you are a tourist who simply wants to know what the average temperature *is* each season, you would prefer a bar chart.

The bar chart in Figure 14.14 orients its columns vertically. We are used to reading vertical thermometers, so that orientation works well. Any quantities, because you can imagine quantities of things stacked on top of each other, also appear to best advantage vertically. On the other hand, readers usually imagine information such as speed or distance horizontally, so the bars in a chart of distances should be horizontal. Choose the orientation that most closely captures the way a reader would envision your information.

Pie Charts A pie chart allows readers to visualize the relative sizes—the proportions—of the parts of a whole (Figure 14.15). This chart allows you to quickly ascertain the relative values of the seven main parts of the total weekly expenditure. Unfortunately, pie charts do not do anything well except demonstrate relative proportions, and they have some drawbacks. When the pie has to be sliced into too many pieces, some of the small pieces have to be identified by words outside the pie chart itself, making the chart harder to read (it is often better to combine the small pieces under a heading such as "Miscellaneous"). If the parts of the pie are of roughly equal value, it is much easier to write out a list of the parts and simply *say* that they are roughly equal. A pie chart, in short, is good at representing only wholes made up of a small number of parts of unequal value.

Some experts in graphic communications believe that pie charts are never a good choice, and that may be true when writing documents for

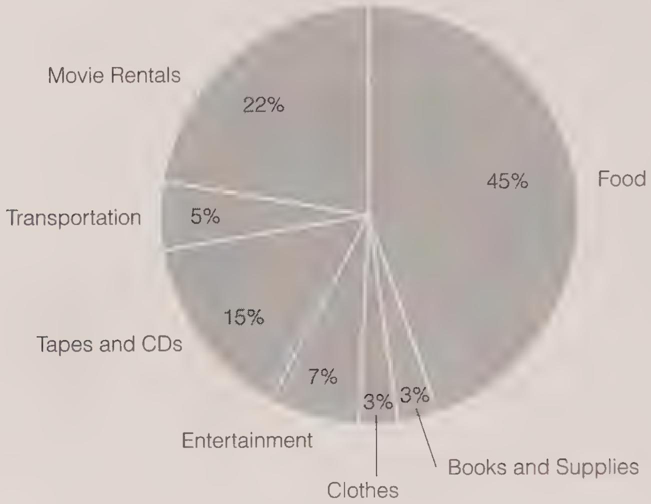


FIGURE 14.15. *Pie chart of a student's weekly expenditures.*

experts in a discipline. However, for inexpert audiences that need only to grasp relative proportions of a small number of parts, the pie chart works well. As is true of any graphic, a pie chart can be made confusing by poor labeling and excessive clutter. The moire effects (the apparent vibration of the lines) of the pie chart in Figure 14.16 distract rather than aid.

When choosing among graphic options, think of what each does best. Tables allow point-to-point comparisons and presentation of complex data, line graphs follow trends, bar charts facilitate comparisons of focused quantitative information, and pie charts demonstrate the percentages of a limited number of parts of a whole.

When designing individual graphics, remember your audience's needs. An audience of professionals to whom you want to present complicated information will need to see that information as simply as possible; visual frills such as a multicolored, three-dimensional bar chart will only distract them. On the other hand, if you are composing something like an advertisement, presenting a simple set of data to a potentially disinterested audience, you must first get their attention. In that situation a fancy bar chart may be just the thing.

Diagrams Diagrams can be used to convey nonstatistical information. In your reading you have no doubt seen hundreds of them: blueprints, line drawings, schematic diagrams, flow charts, and so on. They are very good at showing the basic structures of complex systems, as in an organizational

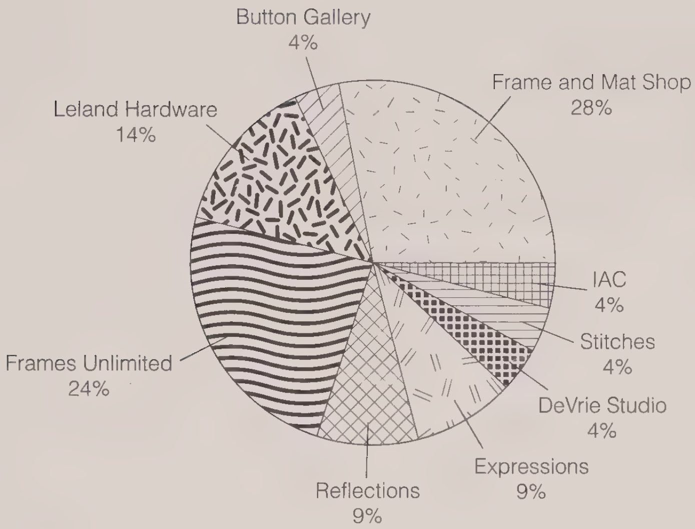


FIGURE 14.16. *A cluttered and distracting pie chart.*

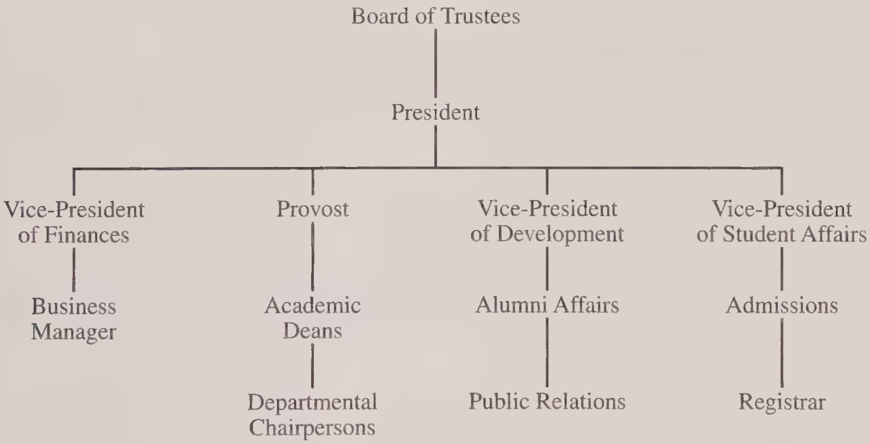

Board of Trustees
President
Vice-President of Finances
Provost
Vice-President of Development
Vice-President of Student Affairs
Business Manager
Academic Deans
Alumni Affairs
Admissions
Departmental Chairpersons
Public Relations
Registrar

FIGURE 14.17. *Organizational chart of a college administration.*

chart of a business (Figure 14.17). Flow charts are another common diagram. They can indicate anything from the direction of materials in a supply line to the process of thinking that goes into writing a paper (Figure 14.18).

Diagrams are commonly used in instructions. It is easy to imagine how much more efficient a diagram can be than a verbal description. Think of how many words you would need to convey the information in the diagram of how to wire an electrical outlet that appears in Figure 14.19. A diagram

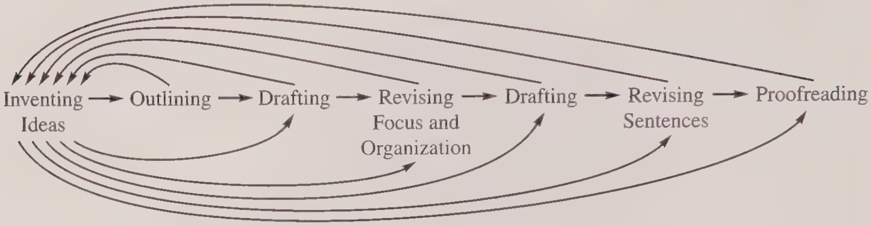

Inventing Ideas
Outlining
Drafting
Revising Focus and Organization
Drafting
Revising Sentences
Proofreading

FIGURE 14.18. *Flow chart of a writing process.*

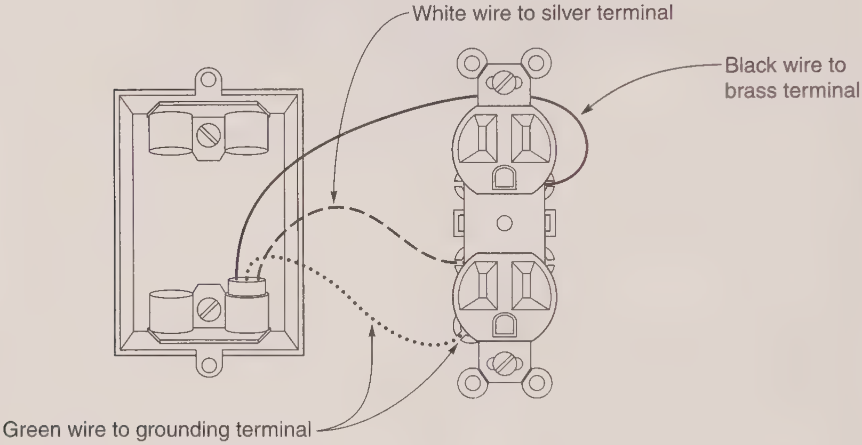

White wire to silver terminal
Black wire to brass terminal
Green wire to grounding terminal

FIGURE 14.19. *Wiring diagram.*

such as this is also better than a photograph because it simplifies the process and materials, eliminating the complexity and unnecessary information that a photo would reproduce.

Photographs A photograph of the wiring of an outlet may be more confusing than a wiring diagram, but a diagram of a plate of food would make a dreadful substitute for a rich color photograph in an advertisement. In some situations, photos are the perfect graphic choice. Photographs must, however, be chosen carefully so as to concentrate the readers' attention on the *point.* Photos usually contain a lot of detail—a lot of information—and can therefore allow readers to shift their focus away from what you intend. You would naturally suppose that an advertisement for a quaint-looking motel would be enhanced with a photo, but you would have to be careful about peripheral details such as the types of cars that appear in the motel's parking lot. I know a person who will not stop at motels with too many minivans in the lot because she assumes there will be noisy children staying there.

Trust your own experience when selecting a graphic. If a photograph, diagram, or chart helped *you* to understand your subject, the same may well be true for your readers. Nurture your instincts, study the visual devices used by writers in your discipline, and develop your stock of options for visual communications. Doing that should enable you to create effective visual complements for your written words.

Exercise 14.3 Selecting and Building Graphics

Effective writers must know what kind of graphic would best serve each individual purpose and audience. Then they must be able to design and construct the appropriate graphics.

I have supplied the information that you will use to create six different graphics. Using the given data as well as the explanations of audience and purpose, create one graphic for each of the six sets of information. You may create tables, pie charts, line graphs, diagrams, photos (if you cannot take and develop a photo, you may describe what the photo would look like)—whatever you deem best for each situation. Briefly explain why you chose each graphic.

As you are completing this exercise, note the difficulty of reading the information as it is presented below and contrast that to the ease of reading the same information in the graphics you create.

1. *Purpose and audience.* Convey factual information for an audience interested in performance trends in Olympic track and field events.

   Specifics. First-place distances in the women's javelin throw, 1948–92: 1948 – 137 ft 6.5 in.; 1956 – 176 ft 1.5 in.; 1960 – 180 ft 8.25 in.; 1964 – 187 ft 10.75 in.; 1968 – 191 ft 2.5 in.; 1972 – 218 ft 7 in.; 1976 – 226 ft 4 in.; 1980 – 224 ft 5 in.; 1984 – 228 ft 2 in.; 1988 – 245 ft; 1992 – 224 ft 2.5 in.
2. *Purpose and audience.* Attract potential customers to a sale at a clothing store.

   Specifics. A winter clearance sale at an exclusive women's boutique; design the graphics for an advertisement to be placed in a daily newspaper (you may invent any other necessary details).
3. *Purpose and audience.* Provide information to a general audience on the relative frequency of several types of crime in selected U.S. cities.

   Specifics. Crime rates are per 100,000 inhabitants, 1992. New York: murder 27.1, rape 38.2, robbery 1,237, auto theft 1,722; Los Angeles: murder 30.3, rape 51.8, robbery 1,093, auto theft 1,880; Philadelphia: murder 26.5, rape 48.7, robbery 728, auto theft 1,398; Detroit: murder 57.0, rape 117.3, robbery 1,168, auto theft 2,619; San Francisco: murder 15.6, rape 52.6, robbery 1,102, auto theft 1,687; Mesa: murder 3.0, rape 39.5, robbery 98, auto theft 833; Colorado

Springs: murder 5.7, rape 76.3, robbery 151, auto theft 364; Anaheim: murder 12.7, rape 32.6, robbery 323, auto theft 1,258; Newark: murder 31.3, rape 112.8, robbery 1,942, auto theft 5,019; Cleveland: murder 30.6, rape 166.3, robbery 861, auto theft 2,096. (Source: *Statistical Abstract of the United States*, 1994.)

4. *Purpose and audience.* Provide information for a report on worldwide use of computers, written for executives at a computer-parts manufacturer.

   Specifics. The percentages of computers used in the world, by geographic distribution. USA 43%, Europe 22%, Japan 7%, others 28%. (Source: Juliussen and Juliussen, *7th Annual Computer Industry Almanac,* 1994.)

5. *Purpose and audience.* Provide comparative information for a general audience on the use of computers, telephones, and televisions across the world.

   Specifics. Numbers of items in use given per 1,000 inhabitants. USA: 288 computers, 965 telephones, 900 televisions; Europe: 76 computers, 446 telephones, 363 televisions; Japan: 98 computers, 650 telephones, 635 televisions; Russia: 8 computers, 150 telephones, 350 televisions; worldwide: 31 computers, 156 telephones, 182 televisions. (Source: Juliussen and Juliussen, *7th Annual Computer Industry Almanac,* 1994.)

6. *Purpose and audience.* Imagine that you are a writing teacher; graphically explain the process of writing, distributing, and explaining assignments and of collecting, responding to, and returning graded papers.

   Specifics. All the details are up to you; you may base this process on the actual practices of a teacher you know or on your own ideas for a more ideal process.

WORKSHOP 17

Visual Communications in the Disciplines

In this workshop you have the opportunity to think comparatively about the student writing projects that have been the basis for the whole series of workshops, and you will need to look back at the final drafts of each paper, reproduced in Workshops 1 through 4 in Chapter 2.

Colleen's comments and questions about visual choices are, again, briefest, and Joe, as always, makes comments rather than asking questions; but even Clarence, who always had a lot of questions in his journal, had very little that concerned him about format. Overall there are far fewer things said and asked about format than about any of the subjects of Parts 1 through 4.

Why is that? The content of the questions and comments gives us some clues. Look, for example, at what Colleen wrote. Although she implicitly says that she had no format choices because she had to follow MLA style guidelines, in fact her teacher emphatically encourages creativity over conformity and MLA style does not prohibit many options that she never considered. Her teacher would have been open to the use of headings or perhaps some graphic means of comparing the two texts of *Hamlet.* Colleen's assumptions tell us more about the weight of disciplinary traditions than about the particular choices she actually had at her disposal. I am not arguing that Colleen should have made her paper more visually experimental than it is; I am simply saying that she assumed limits that did not in fact exist and did not pursue options. Perhaps because visual memories are typically strong, students hesitate to modify traditional visual formats. And this may be especially true for students in a position such as Colleen, who was taught MLA style in her first-year composition class and was not introduced to visual options.

Marji's questions, she told me, were partially the result of her teacher's change in the assignment. Had the teacher stayed with the original, more scientific and quantitative approach, Marji might have felt more at ease about the number and variety of figures to use. She would not have asked how well her figures complemented the themes that were the focus of the final, qualitative version of the assignment.

Setting aside speculations about why the students had few questions, we can say with some confidence that models of visual options are necessary for a writer learning traditions and preparing for possible adaptations. Read widely in your field, and read with eyes open to the visual choices that writers in the disciplines make.

THE STUDENTS' QUESTIONS AND COMMENTS ABOUT FORMAT

Colleen, Humanities:

- MLA, of course for the title, etc. No other choices.

Clarence, Natural Sciences:

- Do I need to put scientific names in figure captions? How much information should show up in the captions?

Marji, Social Sciences:

- I was very uncertain about my figures. How should I refer to them? How many were necessary? How much variety in kinds of figures should I have? How well do the figures fit in with the themes?

Joe, Business:

- I decided on Palatino font because it looks professional and versatile, without looking like I used some old Underwood electric model. It seemed “fresh”—and I could use bold or italics to create headings and subheadings.
- The format was spoon-fed to me with the outline. I chose to make my headings/subheadings/lists very obvious and easy to scan. I guess this was a subconscious decision, because I noticed that a couple of other students were breaking the audit section into eight small subsections, but just wrote straight paragraphs under each heading. I prefer my way.

Questions for You

Analyze the students’ final drafts (your teacher may suggest that you do only two or three rather than all four) and find opportunities for redesigning formats. First, are there traditional visual techniques that students could have used, used more, used better, or used differently? Second, do you find any adaptations, any hybrid formats that the students have created? Third, assuming that the teachers would have allowed adaptations, what revisions would you suggest (explain the reasons for your suggestions, including comments on how your proposed adaptations would serve the purpose of each paper)? Finally, having thought about format in these four papers, what questions would you add to those of Colleen, Clarence, Marji, and Joe?

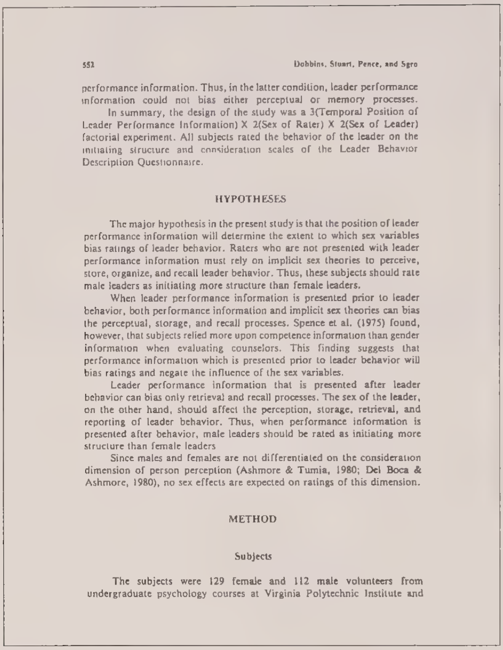
15

Adaptations: Format

In this chapter we must first recognize the differences between the options open to you as a student and those available to professional writers. We will deal with that difference and study some examples of traditional and innovative formats in "Limitations and Options"; then we will close the chapter with a few "Cautions."

LIMITATIONS AND OPTIONS

In Chapter 13, I said that anyone with a computer could now make choices and create visual features that formerly only editors had at their service. However, while you and your teachers can now use those options, any document that is sent off to be published will still have its visual character decided by the editor of the publication. That editor's decisions of visual features will be based on the guidelines given in publication manuals: for the humanities, the *Modern Language Association Handbook for Writers of Research Papers,* Fourth Edition (MLA style) is the most used standard. For the social sciences almost all publications follow the *Publication Manual of the American Psychological Association,* Fourth Edition (APA style). For the natural sciences there are several smaller manuals, but the most widely used is the *Scientific Style and Format: The CBE Manual for Authors, Editors, and Publishers* Sixth Edition (Council of Biology Editors style). Business writers may use any of these manuals, a style sheet developed for their own company, or another common manual, such as the *Chicago Manual of*



552 Dobbins, Stuart, Pence, and Sgro

performance information. Thus, in the latter condition, leader performance information could not bias either perceptual or memory processes.

In summary, the design of the study was a 3(Temporal Position of Leader Performance Information) X 2(Sex of Rater) X 2(Sex of Leader) factorial experiment. All subjects rated the behavior of the leader on the initiating structure and consideration scales of the Leader Behavior Description Questionnaire.

HYPOTHESES

The major hypothesis in the present study is that the position of leader performance information will determine the extent to which sex variables bias ratings of leader behavior. Raters who are not presented with leader performance information must rely on implicit sex theories to perceive, store, organize, and recall leader behavior. Thus, these subjects should rate male leaders as initiating more structure than female leaders.

When leader performance information is presented prior to leader behavior, both performance information and implicit sex theories can bias the perceptual, storage, and recall processes. Spence et al. (1975) found, however, that subjects relied more upon competence information than gender information when evaluating counselors. This finding suggests that performance information which is presented prior to leader behavior will bias ratings and negate the influence of the sex variables.

Leader performance information that is presented after leader behavior can bias only retrieval and recall processes. The sex of the leader, on the other hand, should affect the perception, storage, retrieval, and reporting of leader behavior. Thus, when performance information is presented after behavior, male leaders should be rated as initiating more structure than female leaders

Since males and females are not differentiated on the consideration dimension of person perception (Ashmore & Tumia, 1980; Del Boca & Ashmore, 1980), no sex effects are expected on ratings of this dimension.

METHOD

Subjects

The subjects were 129 female and 112 male volunteers from undergraduate psychology courses at Virginia Polytechnic Institute and

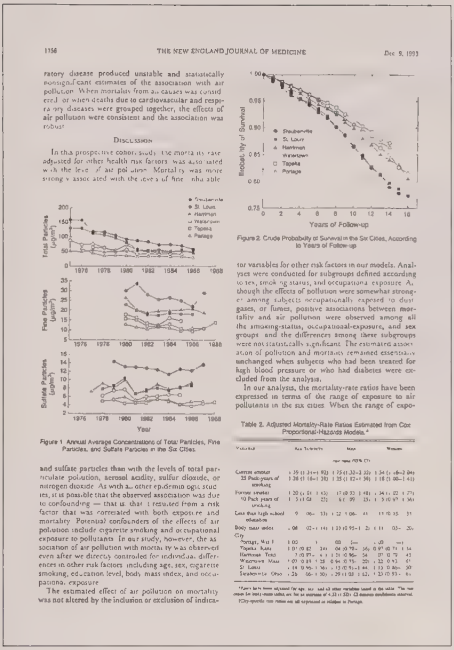
FIGURE 15.1. *Typical format in the social sciences.*

Style (CMS, or Chicago, style). The MLA, APA, CBE, and Chicago styles are explained in the appendix on "Documenting Information."

In the subsection on "Headings" in Chapter 14, we looked at the American Psychological Association guidelines; you should recall how little freedom it gives writers. And its guidelines for tables, graphs, and other visual features are just as detailed as those for headings. Consequently, publications in the professional journals of the social sciences appear very much alike, and the sample that appears in Figure 15.1 typifies the look. Social science papers almost always use an IMRAD organizational scheme, with the conventional IMRAD headings clearly marking individual sections and subsections. They also use tables and graphs, and they follow APA guidelines for documenting their sources.

Papers in the natural sciences have much the same look as those in the social sciences. They are usually shorter and more densely packed with graphics, especially tables, but the IMRAD organization is the most characteristic visual feature. Figure 15.2 illustrates the traditional visual features.

Papers in the humanities use few headings because their readers do not



1756 THE NEW ENGLAND JOURNAL OF MEDICINE Dec 9, 1993

ratory disease produced unstable and statistically nonsignificant estimates of the association with air pollution. When mortality from all causes was considered, or when deaths due to cardiovascular and respiratory diseases were grouped together, the effects of air pollution were consistent and the association was robust.

DISCUSSION

In this prospective cohort study, the mortality rate, adjusted for other health risk factors, was associated with the level of air pollution. Mortality was more strongly associated with the levels of fine, inhalable

Figure 1. Annual Average Concentrations of Total Particles, Fine Particles, and Sulfate Particles in the Six Cities.

and sulfate particles than with the levels of total particulate pollution, aerosol acidity, sulfur dioxide, or nitrogen dioxide. As with all other epidemiologic studies, it is possible that the observed association was due to confounding — that is, that it resulted from a risk factor that was correlated with both exposure and mortality. Potential confounders of the effects of air pollution include cigarette smoking and occupational exposure to pollutants. In our study, however, the association of air pollution with mortality was observed even after we directly controlled for individual differences in other risk factors, including age, sex, cigarette smoking, education level, body mass index, and occupational exposure.

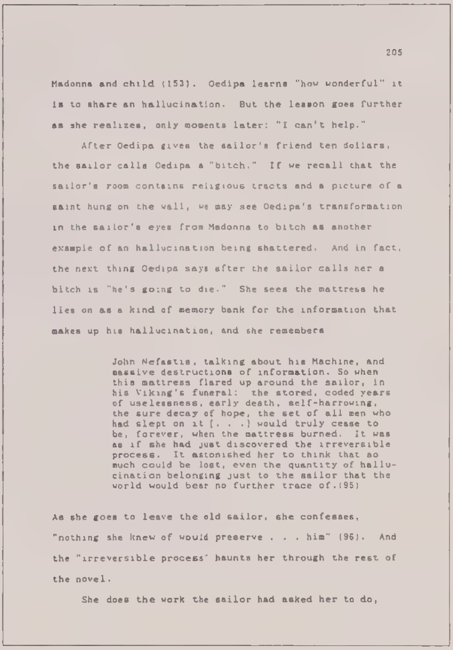
The estimated effect of air pollution on mortality was not altered by the inclusion or exclusion of indicator variables for other risk factors in our models. Analyses were conducted for subgroups defined according to sex, smoking status, and occupational exposure. Although the effects of pollution were somewhat stronger among subjects occupationally exposed to dust, gases, or fumes, positive associations between mortality and air pollution were observed among all the smoking-status, occupational-exposure, and sex groups, and the differences among these subgroups were not statistically significant. The estimated association of pollution and mortality remained essentially unchanged when subjects who had been treated for high blood pressure or who had diabetes were excluded from the analysis.

In our analysis, the mortality-rate ratios have been expressed in terms of the range of exposure to air pollutants in the six cities. When the range of expo-

Figure 2. Crude Probability of Survival in the Six Cities, According to Years of Follow-up

Table 2. Adjusted Mortality-Rate Ratios Estimated from Cox Proportional-Hazards Models.*

FIGURE 15.2. *Typical format in the natural sciences.*



205

Madonna and child (153). Oedipa learns "how wonderful" it is to share an hallucination. But the lesson goes further as she realizes, only moments later: "I can't help."

After Oedipa gives the sailor's friend ten dollars, the sailor calls Oedipa a "bitch." If we recall that the sailor's room contains religious tracts and a picture of a saint hung on the wall, we may see Oedipa's transformation in the sailor's eyes from Madonna to bitch as another example of an hallucination being shattered. And in fact, the next thing Oedipa says after the sailor calls her a bitch is "he's going to die." She sees the mattress he lies on as a kind of memory bank for the information that makes up his hallucination, and she remembers

> John Nefastis, talking about his Machine, and massive destructions of information. So when this mattress flared up around the sailor, in his Viking's funeral: the stored, coded years of uselessness, early death, self-harrowing, the sure decay of hope, the set of all men who had slept on it [. . .] would truly cease to be, forever, when the mattress burned. It was as if she had just discovered the irreversible process. It astonished her to think that so much could be lost, even the quantity of hallucination belonging just to the sailor that the world would bear no further trace of.(95)

As she goes to leave the old sailor, she confesses, "nothing she knew of would preserve . . . him" (96). And the "irreversible process" haunts her through the rest of the novel.

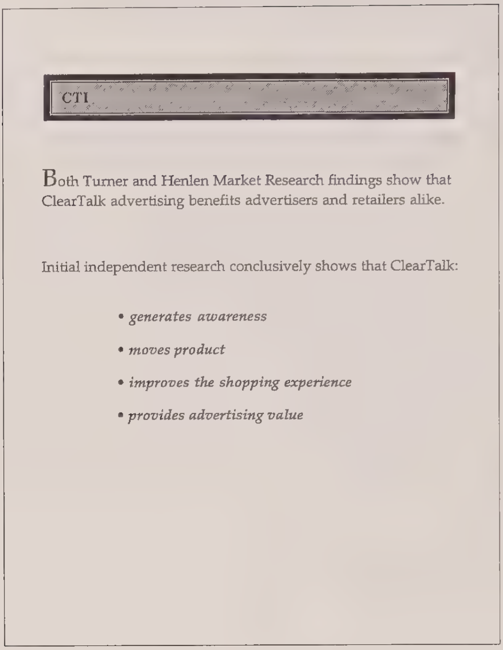
She does the work the sailor had asked her to do,

FIGURE 15.3. *Typical format in the humanities.*

expect to jump around to only the sections that provide the information they want (Figure 15.3). Illustrations provide the single distinguishing visual feature in most writing in the humanities. In papers of literary criticism and philosophy, these illustrations are the quotations, visually marked by quotation marks or indented block quotations. In music or art, they are the reproductions of musical scores and pieces of art.

Any visual adaptations—a departure from an IMRAD organizational scheme in the sciences or a data table in the humanities—are glaring and will need to be well justified before an editor—or perhaps a teacher—will approve them.

In business there is more freedom from convention for two reasons. First, most business documents are produced within the company the writer works for. That writer will have to follow whatever style guides the company may have; but external guides, such as the APA or CMS, will not govern the writer's choices unless the company has decided to use one of those guides as a standard. Second, as we've noted many times, businesspeople write to a wide variety of audiences and use visual designs appropriate to each audience. The example in Figure 15.4 is from a report sent outside of a com-



CTI

Both Turner and Henlen Market Research findings show that ClearTalk advertising benefits advertisers and retailers alike.

Initial independent research conclusively shows that ClearTalk:

- *generates awareness*
- *moves product*
- *improves the shopping experience*
- *provides advertising value*

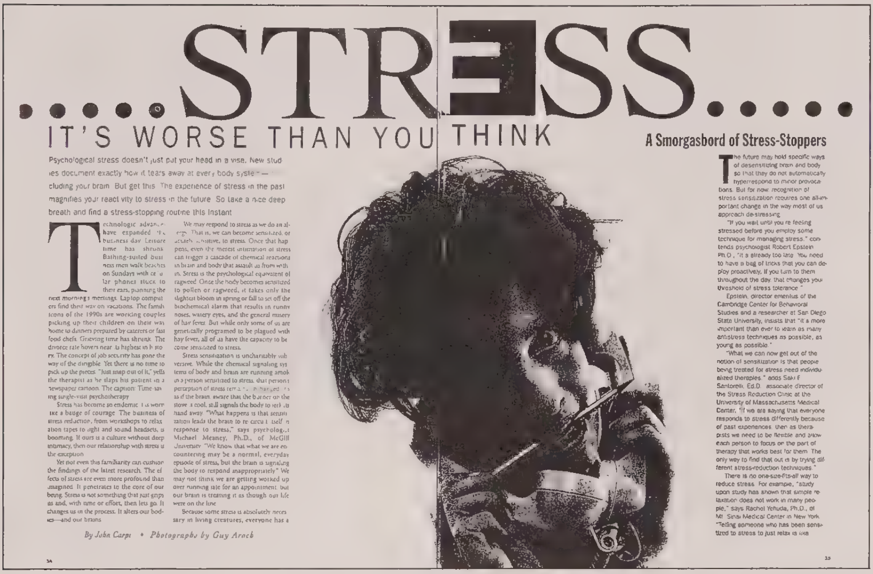
FIGURE 15.4. *Format of a business report with an advertising goal.*

pany. Because it is a report that also serves as an advertisement, its format is simple and eye-catching, focusing attention on a few items of significant information.

More than anything else, the needs of an audience most dramatically drive adaptations in all the disciplines. As a general rule we can say that the broader the audience (the less expert, the less likely to expect a traditional appearance), the more a writer has freedom to innovate. In addition to allowing increased freedom to adapt creatively, a broad audience demands such creativity in order for a writer to capture their attention.

When social and natural scientists write for general audiences, in publications with wide circulations and big budgets, they use aggressively strong and varied visual effects, as in the examples from *Psychology Today* and *Scientific American* that appear in Figure 15.5. And even the staid look of literary criticism gets a jolt of visual energy when it appears in a popular magazine such as *Harper's*, as in the pages of an essay on *The Adventures of Huckleberry Finn* that appear in Figure 15.6.

An audience can also drive a publication to a more traditional look. Business journals published for business professors may opt for a conventional academic look, as in the format of an essay from a conservative, academic journal, *Business and Society* (Figure 15.7).



STRESS

IT'S WORSE THAN YOU THINK

Psychological stress doesn't just put your head in a vise. New studies document exactly how it tears away at every body system—including your brain. But get this: The experience of stress in the past magnifies your reactivity to stress in the future. So take a nice deep breath and find a stress-stopping routine this instant.

Technologic advances have expanded the business day. Leisure time has shrunk. Bathing-suited businessmen walk beaches on Sundays with cellular phones stuck to their ears, planning the next morning's meetings. Laptop computers find their way on vacations. The family icons of the 1990s are working couples picking up their children on their way home to dinners prepared by caterers or fast food chefs. Grieving time has shrunk. The divorce rate hovers near its highest in history. The concept of job security has gone the way of the dirigible. Yet there is no time to pick up the pieces. "Just snap out of it," yells the therapist as he slaps his patient in a newspaper cartoon. The caption: Time-saving single-visit psychotherapy.

Stress has become so endemic it is worn like a badge of courage. The business of stress reduction, from workshops to relaxation tapes to light and sound headsets, is booming. If ours is a culture without deep intimacy, then our relationship with stress is the exception.

Yet not even this familiarity can cushion the findings of the latest research. The effects of stress are even more profound than imagined. It penetrates to the core of our being. Stress is not something that just grips us and, with time or effort, then lets go. It changes us in the process. It alters our bodies—and our brains.

We may respond to stress as we do an allergy. That is, we can become sensitized, or acutely sensitive, to stress. Once that happens, even the merest intimation of stress can trigger a cascade of chemical reactions in brain and body that assault us from within. Stress is the psychological equivalent of ragweed. Once the body becomes sensitized to pollen or ragweed, it takes only the slightest bloom in spring or fall to set off the biochemical alarm that results in runny noses, watery eyes, and the general misery of hay fever. But while only some of us are genetically programed to be plagued with hay fever, all of us have the capacity to become sensitized to stress.

Stress sensitization is uncharitably subversive. While the chemical signaling systems of body and brain are running amok in a person sensitized to stress, that person's perception of stress remains unchanged. It's as if the brain, aware that the burner on the stove is cool, still signals the body to jerk its hand away. "What happens is that sensitization leads the brain to re-circuit itself in response to stress," says psychologist Michael Meaney, Ph.D., of McGill University. "We know that what we are encountering may be a normal, everyday episode of stress, but the brain is signaling the body to respond inappropriately." We may not think we are getting worked up over running late for an appointment, but our brain is treating it as though our life were on the line.

Because some stress is absolutely necessary in living creatures, everyone has a

By John Carpi • Photographs by Guy Aroch

34

A Smorgasbord of Stress-Stoppers

The future may hold specific ways of desensitizing brain and body so that they do not automatically hyperrespond to minor provocations. But for now, recognition of stress sensitization requires one all-important change in the way most of us approach de-stressing.

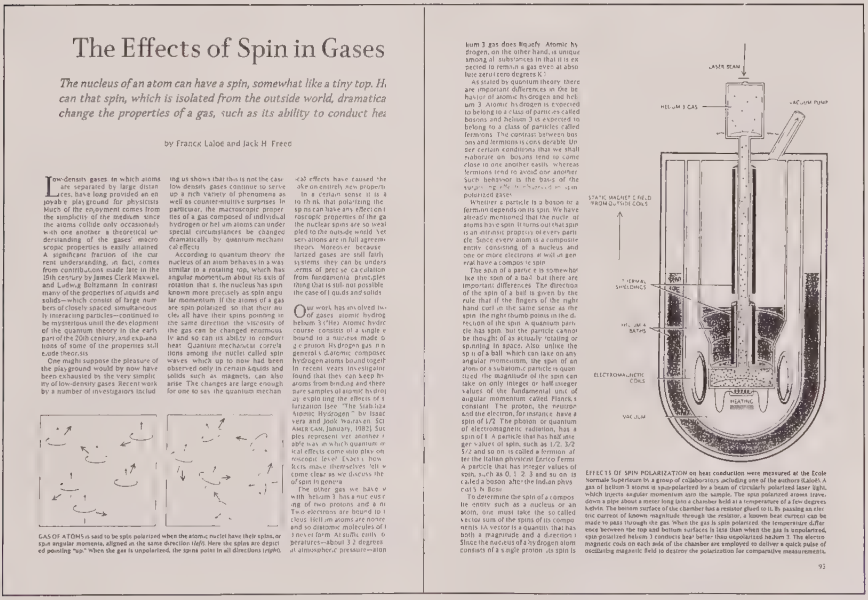
"If you wait until you're feeling stressed before you employ some technique for managing stress," contends psychologist Robert Epstein, Ph.D., "it's already too late. You need to have a bag of tricks that you can deploy proactively. If you turn to them throughout the day, that changes your threshold of stress tolerance."

Epstein, director emeritus of the Cambridge Center for Behavioral Studies and a researcher at San Diego State University, insists that "it's more important than ever to learn as many antistress techniques as possible, as young as possible."

"What we can now get out of the notion of sensitization is that people being treated for stress need individualized therapies," adds Saki F. Santorelli, Ed.D., associate director of the Stress Reduction Clinic at the University of Massachusetts Medical Center. "If we are saying that everyone responds to stress differently because of past experiences, then as therapists we need to be flexible and allow each person to focus on the part of therapy that works best for them. The only way to find that out is by trying different stress-reduction techniques."

There is no one-size-fits-all way to reduce stress. For example, "study upon study has shown that simple relaxation does not work in many people," says Rachel Yehuda, Ph.D., of Mt. Sinai Medical Center in New York. "Telling someone who has been sensitized to stress to just relax is like

35



The Effects of Spin in Gases

The nucleus of an atom can have a spin, somewhat like a tiny top. H
can that spin, which is isolated from the outside world, dramatica
change the properties of a gas, such as its ability to conduct hea

by Franck Laloë and Jack H. Freed

Low-density gases, in which atoms are separated by large distances, have long provided an enjoyable playground for physicists. Much of the enjoyment comes from the simplicity of the medium: since the atoms collide only occasionally with one another, a theoretical understanding of the gases' macroscopic properties is easily attained. A significant fraction of the current understanding, in fact, comes from contributions made late in the 19th century by James Clerk Maxwell and Ludwig Boltzmann. In contrast, many of the properties of liquids and solids—which consist of large numbers of closely spaced, simultaneously interacting particles—continued to be mysterious until the development of the quantum theory in the early part of the 20th century, and explanations of some of the properties still elude theorists.

One might suppose the pleasure of the playground would by now have been exhausted by the very simplicity of low-density gases. Recent work by a number of investigators including us shows that this is not the case: low-density gases continue to serve up a rich variety of phenomena as well as counterintuitive surprises. In particular, the macroscopic properties of a gas composed of individual hydrogen or helium atoms can under special circumstances be changed dramatically by quantum-mechanical effects.

According to quantum theory, the nucleus of an atom behaves in a way similar to a rotating top, which has angular momentum about its axis of rotation; that is, the nucleus has spin, known more precisely as spin angular momentum. If the atoms of a gas are spin-polarized, so that their nuclei all have their spins pointing in the same direction, the viscosity of the gas can be changed enormously and so can its ability to conduct heat. Quantum-mechanical correlations among the nuclei called spin waves, which up to now had been observed only in certain liquids and solids such as magnets, can also arise. The changes are large enough for one to say the quantum-mechanical effects have caused the
ake on entirely new properti
In a certain sense it is a
to think that polarizing the
spins can have any effect on t
roscopic properties of the ga
the nuclear spins are so weal
pled to the outside world. Yet
servations are in full agreem
theory. Moreover, because
larized gases are still fairly
systems, they can be unders
terms of precise calculation
from fundamental principles
thing that is still not possible
the case of liquids and solids.

Our work has involved tw
of gases: atomic hydrog
helium 3 (^{3}He). Atomic hydro
course consists of a single e
bound to a nucleus made o
gle proton. Hydrogen gas in
generally diatomic, composed
hydrogen atoms bound togeth
In recent years investigators
found that they can keep hy
atoms from binding and there
pure samples of atomic hydrog
by exploiting the effects of s
larization [see "The Stabiliza
Atomic Hydrogen," by Isaac
vera and Jook Walraven; SCI
AMERICAN, January, 1982]. Suc
ples represent yet another r
able way in which quantum m
ical effects come into play on
roscopic level. Exactly how
fects make themselves felt w
come clear as we discuss the
of spin in general.
The other gas we have w
with helium 3, has a nucleus c
ing of two protons and a ne
Two electrons are bound to t
cleus. Helium atoms are nonre
and so diatomic molecules of h
3 never form. At sufficiently lo
peratures—about 3.2 degrees
at atmospheric pressure—hel

GAS OF ATOMS is said to be spin polarized when the atomic nuclei have their spins, or spin angular momenta, aligned in the same direction (*left*). Here the spins are depicted pointing "up." When the gas is unpolarized, the spins point in all directions (*right*).

lium 3 gas does liquefy. Atomic hydrogen, on the other hand, is unique among all substances in that it is expected to remain a gas even at absolute zero (zero degrees K.)

As stated by quantum theory, there are important differences in the behavior of atomic hydrogen and helium 3. Atomic hydrogen is expected to belong to a class of particles called bosons and helium 3 is expected to belong to a class of particles called fermions. The contrast between bosons and fermions is considerable. Under certain conditions that we shall elaborate on, bosons tend to come close to one another easily, whereas fermions tend to avoid one another. Such behavior is the basis of the surprising effects observed in spin-polarized gases.

Whether a particle is a boson or a fermion depends on its spin. We have already mentioned that the nuclei of atoms have spin. It turns out that spin is an intrinsic property of every particle. Since every atom is a composite entity consisting of a nucleus and one or more electrons, it will in general have a composite spin.

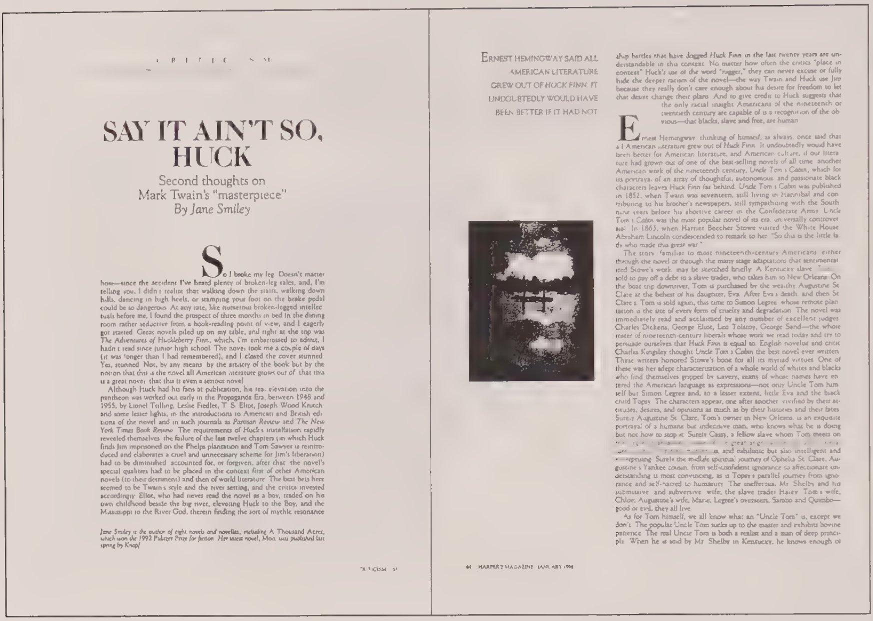
The spin of a particle is somewhat like the spin of a ball, but there are important differences. The direction of the spin of a ball is given by the rule that if the fingers of the right hand curl in the same sense as the spin, the right thumb points in the direction of the spin. A quantum particle has spin, but the particle cannot be thought of as actually rotating or spinning in space. Also, unlike the spin of a ball, which can take on any angular momentum, the spin of an atom or a subatomic particle is quantized: the magnitude of the spin can take on only integer or half-integer values of the fundamental unit of angular momentum called Planck's constant. The proton, the neutron and the electron, for instance, have a spin of 1/2. The photon, or quantum of electromagnetic radiation, has a spin of 1. A particle that has half-integer values of spin, such as 1/2, 3/2, 5/2 and so on, is called a fermion, after the Italian physicist Enrico Fermi. A particle that has integer values of spin, such as 0, 1, 2, 3 and so on, is called a boson, after the Indian physicist S. N. Bose.

To determine the spin of a composite entity such as a nucleus or an atom, one must take the so-called vector sum of the spins of its components. (A vector is a quantity that has both a magnitude and a direction.) Since the nucleus of a hydrogen atom consists of a single proton, its spin is

EFFECTS OF SPIN POLARIZATION on heat conduction were measured at the Ecole Normale Supérieure by a group of collaborators including one of the authors (Laloë). A gas of helium-3 atoms is spin-polarized by a beam of circularly polarized laser light, which injects angular momentum into the sample. The spin polarized atoms travel down a pipe about a meter long into a chamber held at a temperature of a few degrees kelvin. The bottom surface of the chamber has a resistor glued to it. By passing an electric current of known magnitude through the resistor, a known heat current can be made to pass through the gas. When the gas is spin polarized, the temperature difference between the top and bottom surfaces is less than when the gas is unpolarized; spin-polarized helium 3 conducts heat better than unpolarized helium 3. The electromagnetic coils on each side of the chamber are employed to deliver a quick pulse of oscillating magnetic field to destroy the polarization for comparative measurements.

95

FIGURE 15.5. *Formats in popular social and natural science.* **A** Psychology Today *(January/February 1996, pages 34–35).* **B** Scientific American *(April 1988, pages 94–95).*



CRITICISM

SAY IT AIN'T SO, HUCK

Second thoughts on
Mark Twain's "masterpiece"
By Jane Smiley

So I broke my leg. Doesn't matter how—since the accident I've heard plenty of broken-leg tales, and, I'm telling you, I didn't realize that walking down the stairs, walking down hills, dancing in high heels, or stamping your foot on the brake pedal could be so dangerous. At any rate, like numerous broken-legged intellectuals before me, I found the prospect of three months in bed in the dining room rather seductive from a book-reading point of view, and I eagerly got started. Great novels piled up on my table, and right at the top was *The Adventures of Huckleberry Finn*, which, I'm embarrassed to admit, I hadn't read since junior high school. The novel took me a couple of days (it was longer than I had remembered), and I closed the cover stunned. Yes, stunned. Not, by any means, by the artistry of the book but by the notion that this is the novel all American literature grows out of, that this is a great novel, that this is even a serious novel.

Although Huck had his fans at publication, his real elevation into the pantheon was worked out early in the Propaganda Era, between 1948 and 1955, by Lionel Trilling, Leslie Fiedler, T. S. Eliot, Joseph Wood Krutch, and some lesser lights, in the introductions to American and British editions of the novel and in such journals as *Partisan Review* and *The New York Times Book Review*. The requirements of Huck's installation rapidly revealed themselves: the failure of the last twelve chapters (in which Huck finds Jim imprisoned on the Phelps plantation and Tom Sawyer is reintroduced and elaborates a cruel and unnecessary scheme for Jim's liberation) had to be diminished, accounted for, or forgiven; after that, the novel's special qualities had to be placed in the context first of other American novels (to their detriment) and then of world literature. The best bets here seemed to be Twain's style and the river setting, and the critics invested accordingly. Eliot, who had never read the novel as a boy, traded on his own childhood beside the big river, elevating Huck to the Boy, and the Mississippi to the River God, therein finding the sort of mythic resonance

Jane Smiley is the author of eight novels and novellas, including A Thousand Acres, *which won the 1992 Pulitzer Prize for fiction. Her latest novel,* Moo, *was published last spring by Knopf.*

CRITICISM 61

ERNEST HEMINGWAY SAID ALL AMERICAN LITERATURE GREW OUT OF HUCK FINN. IT UNDOUBTEDLY WOULD HAVE BEEN BETTER IF IT HAD NOT

ship battles that have dogged *Huck Finn* in the last twenty years are understandable in this context. No matter how often the critics "place in context" Huck's use of the word "nigger," they can never excuse or fully hide the deeper racism of the novel—the way Twain and Huck use Jim because they really don't care enough about his desire for freedom to let that desire change their plans. And to give credit to Huck suggests that the only racial insight Americans of the nineteenth or twentieth century are capable of is a recognition of the obvious—that blacks, slave and free, are human.

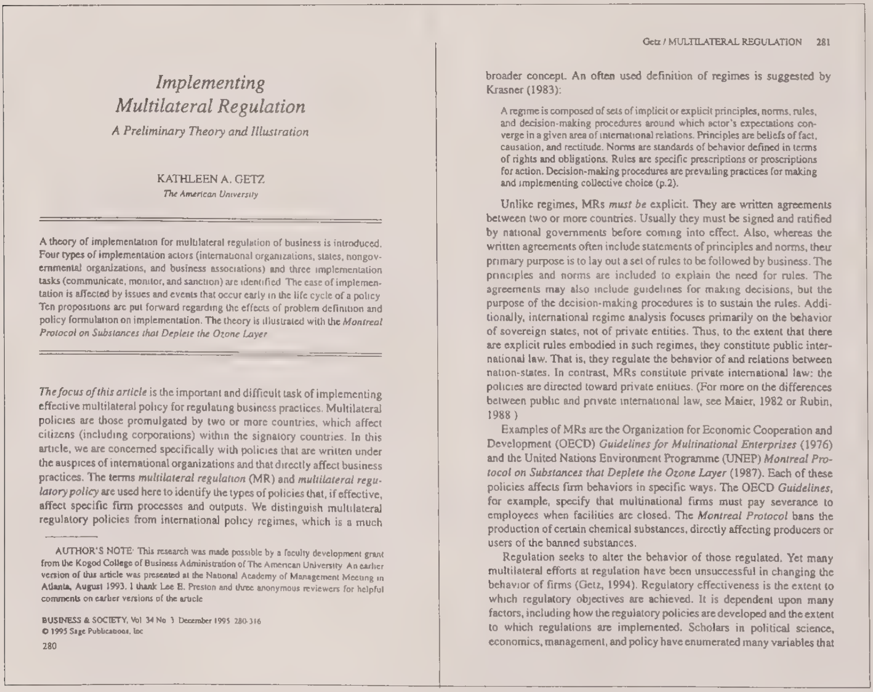
Ernest Hemingway, thinking of himself, as always, once said that all American literature grew out of *Huck Finn*. It undoubtedly would have been better for American literature, and American culture, if our literature had grown out of one of the best-selling novels of all time, another American work of the nineteenth century, *Uncle Tom's Cabin*, which for its portrayal of an array of thoughtful, autonomous, and passionate black characters leaves *Huck Finn* far behind. *Uncle Tom's Cabin* was published in 1852, when Twain was seventeen, still living in Hannibal and contributing to his brother's newspapers, still sympathizing with the South nine years before his abortive career in the Confederate Army. *Uncle Tom's Cabin* was the most popular novel of its era, universally controversial. In 1863, when Harriet Beecher Stowe visited the White House, Abraham Lincoln condescended to remark to her, "So this is the little lady who made this great war."

The story, familiar to most nineteenth-century Americans either through the novel or through the many stage adaptations that sentimentalized Stowe's work, may be sketched briefly. A Kentucky slave, [illegible] sold to pay off a debt to a slave trader, who takes him to New Orleans. On the boat trip downriver, Tom is purchased by the wealthy Augustine St. Clare at the behest of his daughter, Eva. After Eva's death, and then St. Clare's, Tom is sold again, this time to Simon Legree, whose remote plantation is the site of every form of cruelty and degradation. The novel was immediately read and acclaimed by any number of excellent judges: Charles Dickens, George Eliot, Leo Tolstoy, George Sand—the whole roster of nineteenth-century liberals whose work we read today and try to persuade ourselves that *Huck Finn* is equal to. English novelist and critic Charles Kingsley thought *Uncle Tom's Cabin* the best novel ever written. These writers honored Stowe's book for all its myriad virtues. One of these was her adept characterization of a whole world of whites and blacks who find themselves gripped by slavery, many of whose names have entered the American language as expressions—not only Uncle Tom himself but Simon Legree and, to a lesser extent, little Eva and the black child Topsy. The characters appear, one after another, vivified by their attitudes, desires, and opinions as much as by their histories and their fates. Surely Augustine St. Clare, Tom's owner in New Orleans, is an exquisite portrayal of a humane but indecisive man, who knows what he is doing but not how to stop it. Surely Cassy, a fellow slave whom Tom meets on [illegible] great [illegible] s, and nihilistic but also intelligent and [illegible]spiring. Surely the midlife spiritual journey of Ophelia St. Clare, Augustine's Yankee cousin, from self-confident ignorance to affectionate understanding is most convincing, as is Topsy's parallel journey from ignorance and self-hatred to humanity. The ineffectual Mr. Shelby and his submissive, and subversive, wife; the slave trader Haley; Tom's wife, Chloe; Augustine's wife, Marie; Legree's overseers, Sambo and Quimbo—good or evil, they all live.

As for Tom himself, we all know what an "Uncle Tom" is, except we don't. The popular Uncle Tom sucks up to the master and exhibits bovine patience. The real Uncle Tom is both a realist and a man of deep principle. When he is sold by Mr. Shelby in Kentucky, he knows enough of

64 HARPER'S MAGAZINE JANUARY 1996

FIGURE 15.6. *Format in popular humanities.* Harper's *(January 1996, pages 61, 64).*



Implementing Multilateral Regulation

A Preliminary Theory and Illustration

KATHLEEN A. GETZ
The American University

A theory of implementation for multilateral regulation of business is introduced. Four types of implementation actors (international organizations, states, nongovernmental organizations, and business associations) and three implementation tasks (communicate, monitor, and sanction) are identified. The ease of implementation is affected by issues and events that occur early in the life cycle of a policy. Ten propositions are put forward regarding the effects of problem definition and policy formulation on implementation. The theory is illustrated with the *Montreal Protocol on Substances that Deplete the Ozone Layer*.

The focus of this article is the important and difficult task of implementing effective multilateral policy for regulating business practices. Multilateral policies are those promulgated by two or more countries, which affect citizens (including corporations) within the signatory countries. In this article, we are concerned specifically with policies that are written under the auspices of international organizations and that directly affect business practices. The terms *multilateral regulation* (MR) and *multilateral regulatory policy* are used here to identify the types of policies that, if effective, affect specific firm processes and outputs. We distinguish multilateral regulatory policies from international policy regimes, which is a much

AUTHOR'S NOTE: This research was made possible by a faculty development grant from the Kogod College of Business Administration of The American University. An earlier version of this article was presented at the National Academy of Management Meeting in Atlanta, August 1993. I thank Lee E. Preston and three anonymous reviewers for helpful comments on earlier versions of the article.

BUSINESS & SOCIETY, Vol. 34 No. 3, December 1995 280-316
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280

Getz / MULTILATERAL REGULATION 281

broader concept. An often used definition of regimes is suggested by Krasner (1983):

> A regime is composed of sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actor's expectations converge in a given area of international relations. Principles are beliefs of fact, causation, and rectitude. Norms are standards of behavior defined in terms of rights and obligations. Rules are specific prescriptions or proscriptions for action. Decision-making procedures are prevailing practices for making and implementing collective choice (p.2).

Unlike regimes, MRs *must be* explicit. They are written agreements between two or more countries. Usually they must be signed and ratified by national governments before coming into effect. Also, whereas the written agreements often include statements of principles and norms, their primary purpose is to lay out a set of rules to be followed by business. The principles and norms are included to explain the need for rules. The agreements may also include guidelines for making decisions, but the purpose of the decision-making procedures is to sustain the rules. Additionally, international regime analysis focuses primarily on the behavior of sovereign states, not of private entities. Thus, to the extent that there are explicit rules embodied in such regimes, they constitute public international law. That is, they regulate the behavior of and relations between nation-states. In contrast, MRs constitute private international law: the policies are directed toward private entities. (For more on the differences between public and private international law, see Maier, 1982 or Rubin, 1988.)

Examples of MRs are the Organization for Economic Cooperation and Development (OECD) *Guidelines for Multinational Enterprises* (1976) and the United Nations Environment Programme (UNEP) *Montreal Protocol on Substances that Deplete the Ozone Layer* (1987). Each of these policies affects firm behaviors in specific ways. The OECD *Guidelines*, for example, specify that multinational firms must pay severance to employees when facilities are closed. The *Montreal Protocol* bans the production of certain chemical substances, directly affecting producers or users of the banned substances.

Regulation seeks to alter the behavior of those regulated. Yet many multilateral efforts at regulation have been unsuccessful in changing the behavior of firms (Getz, 1994). Regulatory effectiveness is the extent to which regulatory objectives are achieved. It is dependent upon many factors, including how the regulatory policies are developed and the extent to which regulations are implemented. Scholars in political science, economics, management, and policy have enumerated many variables that

FIGURE 15.7. *Format in a traditional academic business journal.* Business and Society *(December 1995, pages 280–81).*

The preceding examples of professional writing leave you without any clear guidelines for your visual choices. To a large extent, you can expect your teachers to offer guidelines similar to those they follow in their own fields, but they can also allow you much greater freedom than they may have. In a sense, you are in the position of a business writer, your papers are produced "in house," governed only by your teacher as editor. One teacher may instruct you to follow APA or MLA conventions to the letter; another may give you free reign to sculpt a format and graphics.

In other words, in learning to employ visual communications in your writing, you once again face the main theme of this book: Learn the traditions, but do so in order to prepare yourself both to follow those traditions and to create adaptations.

CAUTIONS

In Chapter 12, I called attention to Ramsay MacMullen and his *Corruption and the Decline of Rome* as an example of adapting the kinds of detail usually found in the social sciences for use in the humanities. Some of MacMullen's sociological detail is presented through graphics—bar charts, line graphs, diagrams, and so on. I would imagine that his first readers, when flipping through pages as readers tend to do before digging in, were surprised to see all the graphics. Those visual adaptations surely caught their attention. But MacMullen's classical studies received continued attention not simply because they *look* innovative but because they *are* innovative: Their visual features reflect MacMullen's new approaches to the field.

A writer will gain some quick attention with unexpected visual choices, but that attention will soon turn to disrespect and disinterest if it becomes apparent that the visual choices are gimmicks—used only to attract attention. A visual adaptation should reflect an adapted focus and purpose, a different way of thinking about a subject, a different set of questions being asked.

This obviously brings us back to Part 1 and its discussion of the subjects and kinds of questions that are traditionally pursued in the various disciplines. If you start adding headings, subheadings, bullet points, bar charts, diagrams, or other nonconventional visual options to your essays about literature, you will implicitly tell your readers that you are pursuing a nonconventional focus. Visual options, like every choice you make, must be directed by purpose.

In the "Cautions" of Chapter 6, I warned that a little innovation goes a long way. Even minor moves away from the traditional, and therefore expected, stylistic choices glare. In thus calling attention to themselves they demand justification and explanation. This is especially true for visual adaptations; they will not go unnoticed. You cannot slip them in unobtrusively and hope that they will have a subtle influence on the readers. If you are sure that a visual adaptation will help you to accomplish your purpose, do not be afraid to try it, but also be prepared to justify it.

Edward R. Tufte, in a chapter of *The Visual Display of Quantitative Information* titled "Chartjunk," reminds us of a point made earlier in Chapter 14.

> Occasionally [graphic] designers seem to seek credit merely for possessing a new technology, rather than for using it to make better designs. . . . At least a few computer graphics only evoke the response "Isn't it remarkable that the computer can be programmed to draw like that?" instead of "My, what interesting data." (120)

Tufte calls this the "We-Used-A-Computer-To-Build-A-Duck Syndrome." Professionals may think a toy duck is cute, but they are *not* willing to waste valuable reading time on cute toys, and it is safe to say that your teachers share that sentiment.

One final caution has to do with unintentionally creating unethical graphics. If you have a limited knowledge of how graphics work, you may, quite accidentally, use them deceptively. Suppose, for example, that you have decided to use a bar graph, but you find that you do not have room for the graph you have built (Figure 15.8). Since all the values are above 60, you decide to set the baseline value at 50, effectively cutting off the bottom of the chart (Figure 15.9). Your data are still accurate, but the differences

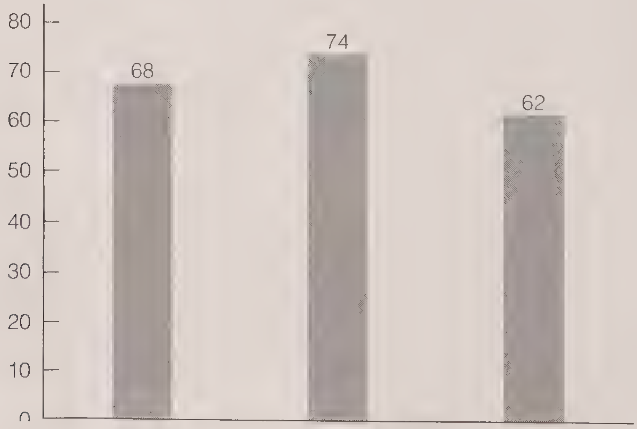


FIGURE 15.8. *Bar graph.*

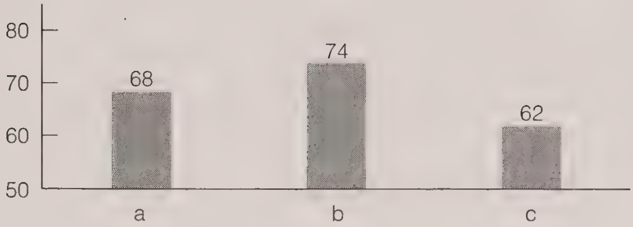


Figure 15.9. *Abbreviated Bar Graph.*

now appear much greater than they actually are because bar B is about twice as big as bar C in the chopped-off chart, even though its actual value is only 20 percent greater.

We cannot go through a full course in designing graphics here, but before you construct your own graphics, you should train yourself to use them knowledgeably and responsibly. Many business and technical writing textbooks offer extensive sections on graphics, but you would be even better off to read a book like Tufte's *The Visual Display of Quantitative Information.*

Exercise 15.1 Experimenting with Visual Communications in the Disciplines

Always create adaptations for good reason—to meet the special needs of a particular audience and purpose. In order to generate some reasonable adaptations of format, think of changes in the audience and/or purpose of a paper that you have written. Select a paper written for a class in a discipline that you may major in (if you do not have such a paper, your teacher may ask you to use a published professional paper or one of the student papers reproduced in the workshops).

Think of three different ways to change the audience and/or purpose and explain the visual adaptations you would design for each change. Also explain how your designs would meet the needs of each new audience and purpose.

For example, imagine that you were rewriting a lab report or poster project from a chemistry class for publication in an elementary school science newsletter; your purpose could be to show fifth graders how a college student learns to be a scientist. Or you could cross disciplines and imagine that you had to revise a business report to make it part of a sociological study. Use your imagination to devise interesting changes in the audience and purpose, and then think carefully about how you might adapt formats to accomplish your goals.

Part Five Conclusion

A Brief Visual Review of *Tradition and Adaptation*

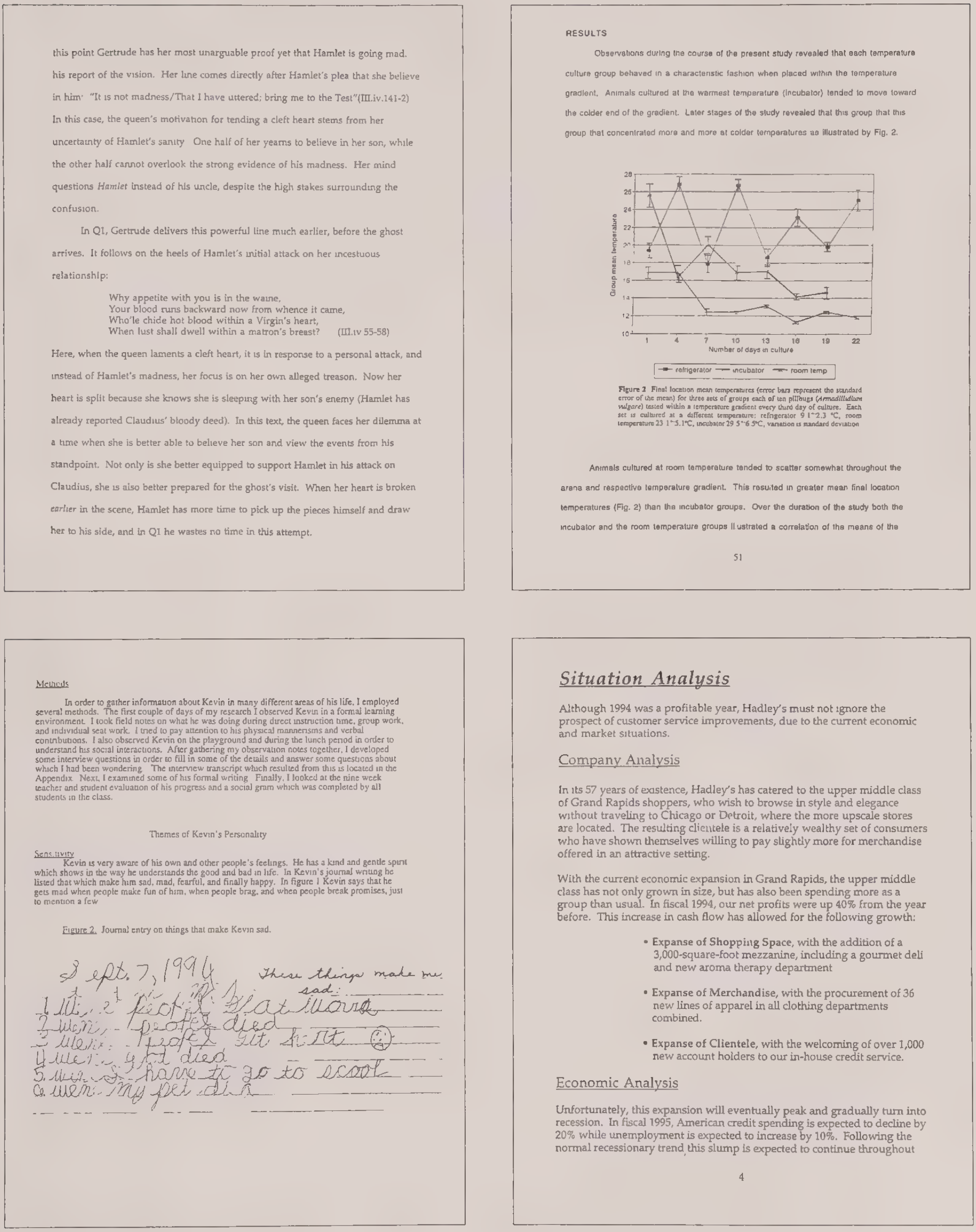
Once again consider examples of format from each of the four disciplinary groups (Figure 1).

Unlike the earlier samples, these were taken from student papers, yet each bears the clear mark of its disciplinary traditions. And, of course, there are good reasons for that. The resemblance between professional and student papers is not the result of stodgy teachers irrationally insisting that their students write like they do. The simple fact is that writing in each discipline has evolved a format that both mirrors and announces that discipline's essential character—the subjects in which it is interested and its methods for studying and communicating its interests.

In the following paragraphs, with apologies for overgeneralizing, I will sketch some features of the relationships among the purpose, audience, and visual communications in each of the four disciplinary groups.

The purpose of writing in the humanities, stated as simply as possible, is to enrich. A writer analyzes a novel, painting, or symphony in order to enrich readers' understanding and appreciation. Readers usually read such an essay straight through, following the logical sequence of the analysis. Consequently, the format is without major breaks. A heading or extra space may announce a new section in the logical flow of ideas, but no headings or other visual organization markers are offered to the reader who wants to jump around and find only a few pieces of information. Graphics such as tables and charts rarely appear; the only visual aids are the reproductions of parts of the items (e.g., a novel, painting, or symphony) under study. The visual nature of good humanities documents is therefore unified, calm, seamless, and fluid.

The natural sciences seek to accumulate knowledge, adding new and reliable data to the body of scientific information in which natural scientists ground their study. Audiences read scientific documents in order to add to their knowledge and find information on which to base their own research. They jump around while reading scientific papers, looking for a set of data, a method, or a source. The format of scientific papers, with their clearly



this point Gertrude has her most unarguable proof yet that Hamlet is going mad. his report of the vision. Her line comes directly after Hamlet's plea that she believe in him: "It is not madness/That I have uttered; bring me to the Test"(III.iv.141-2) In this case, the queen's motivation for tending a cleft heart stems from her uncertainty of Hamlet's sanity One half of her yearns to believe in her son, while the other half cannot overlook the strong evidence of his madness. Her mind questions *Hamlet* instead of his uncle, despite the high stakes surrounding the confusion.

In Q1, Gertrude delivers this powerful line much earlier, before the ghost arrives. It follows on the heels of Hamlet's initial attack on her incestuous relationship:

> Why appetite with you is in the waine,
> Your blood runs backward now from whence it came,
> Who'le chide hot blood within a Virgin's heart,
> When lust shall dwell within a matron's breast? (III.iv 55-58)

Here, when the queen laments a cleft heart, it is in response to a personal attack, and instead of Hamlet's madness, her focus is on her own alleged treason. Now her heart is split because she knows she is sleeping with her son's enemy (Hamlet has already reported Claudius' bloody deed). In this text, the queen faces her dilemma at a time when she is better able to believe her son and view the events from his standpoint. Not only is she better equipped to support Hamlet in his attack on Claudius, she is also better prepared for the ghost's visit. When her heart is broken *earlier* in the scene, Hamlet has more time to pick up the pieces himself and draw her to his side, and in Q1 he wastes no time in this attempt.

RESULTS

Observations during the course of the present study revealed that each temperature culture group behaved in a characteristic fashion when placed within the temperature gradient. Animals cultured at the warmest temperature (incubator) tended to move toward the colder end of the gradient. Later stages of the study revealed that this group that this group that concentrated more and more at colder temperatures as illustrated by Fig. 2.

Figure 2 Final location mean temperatures (error bars represent the standard error of the mean) for three sets of groups each of ten pillbugs (*Armadillidium vulgare*) tested within a temperature gradient every third day of culture. Each set is cultured at a different temperature: refrigerator 9.1+-2.3 °C, room temperature 23.1+-5.1°C, incubator 29.5+-6.5°C, variation is standard deviation

Animals cultured at room temperature tended to scatter somewhat throughout the arena and respective temperature gradient. This resulted in greater mean final location temperatures (Fig. 2) than the incubator groups. Over the duration of the study both the incubator and the room temperature groups illustrated a correlation of the means of the

51

Methods

In order to gather information about Kevin in many different areas of his life, I employed several methods. The first couple of days of my research I observed Kevin in a formal learning environment. I took field notes on what he was doing during direct instruction time, group work, and individual seat work. I tried to pay attention to his physical mannerisms and verbal contributions. I also observed Kevin on the playground and during the lunch period in order to understand his social interactions. After gathering my observation notes together, I developed some interview questions in order to fill in some of the details and answer some questions about which I had been wondering. The interview transcript which resulted from this is located in the Appendix. Next, I examined some of his formal writing. Finally, I looked at the nine week teacher and student evaluation of his progress and a social gram which was completed by all students in the class.

Themes of Kevin's Personality

Sensitivity

Kevin is very aware of his own and other people's feelings. He has a kind and gentle spirit which shows in the way he understands the good and bad in life. In Kevin's journal writing he listed that which make him sad, mad, fearful, and finally happy. In figure 1 Kevin says that he gets mad when people make fun of him, when people brag, and when people break promises, just to mention a few

Figure 2. Journal entry on things that make Kevin sad.

Sept. 7, 1994 These things make me sad:

1. Wen peopl [illegible]
2. wen peopel died
3. wen peopel git hrt ☹
4. wen [illegible] died
5. wen I have to go to scool
6. wen my pet dia

Situation Analysis

Although 1994 was a profitable year, Hadley's must not ignore the prospect of customer service improvements, due to the current economic and market situations.

Company Analysis

In its 57 years of existence, Hadley's has catered to the upper middle class of Grand Rapids shoppers, who wish to browse in style and elegance without traveling to Chicago or Detroit, where the more upscale stores are located. The resulting clientele is a relatively wealthy set of consumers who have shown themselves willing to pay slightly more for merchandise offered in an attractive setting.

With the current economic expansion in Grand Rapids, the upper middle class has not only grown in size, but has also been spending more as a group than usual. In fiscal 1994, our net profits were up 40% from the year before. This increase in cash flow has allowed for the following growth:

- **Expanse of Shopping Space**, with the addition of a 3,000-square-foot mezzanine, including a gourmet deli and new aroma therapy department
- **Expanse of Merchandise**, with the procurement of 36 new lines of apparel in all clothing departments combined.
- **Expanse of Clientele**, with the welcoming of over 1,000 new account holders to our in-house credit service.

Economic Analysis

Unfortunately, this expansion will eventually peak and gradually turn into recession. In fiscal 1995, American credit spending is expected to decline by 20% while unemployment is expected to increase by 10%. Following the normal recessionary trend, this slump is expected to continue throughout

4

FIGURE 1. *Formats in the disciplines.*

marked IMRAD headings, makes it easy for readers to gain access to the knowledge they need. Graphics—tables as well as line graphs and other graphics—allow writers in the sciences to accommodate their readers' needs by presenting the data concisely and accessibly.

Writers in the social sciences share with natural scientists the goal of gathering knowledge, but the complexity of their subject—human behavior—compels them to take more freedom to look into new areas, rather than always building on established knowledge. Their complex subjects also drive them to rely heavily on interpretation of data, thus enriching their audience's understanding of the knowledge they present. Usually they use an IMRAD format that accommodates scientific reading habits. But often they will create innovative formats that both focus on objective data and signal logical analyses and interpretation. Graphics can include both data tables and graphs as well as reproductions of details such as the speech patterns of a group of people.

Business writing facilitates decisions, actions. The great variety of audiences to whom businesspeople write read in an equally great variety of ways—from the quick glance of a person flipping through a magazine and seeing an advertisement, to the cautious analysis of an executive deciding on whether or not to implement the recommendations of a business report, to the rapid but meticulous survey of a personnel director through her company's policies on hiring. Business writers must therefore create formats that allow their audiences (and they will often have several different groups of people reading the same document) to get to the information that will direct their decisions. The result is the creative use of headings, white space, text styles, and so on. Graphics, too, must be designed for the audience(s), so business writers learn to construct everything from data tables, to pie charts, to diagrams.

The story of disciplinary writing that you have learned in this book should have made it clear that every decision about writing—from hyphens to headings—is driven by purpose and audience. The consistency of purposes and audiences in the various disciplines has guided the development of traditions, but the variety and unpredictability of individual writing tasks has taught writers to prepare themselves to adapt.

Think back to the question posed in the "To the Student" section of this book: "Where does the sacredness of duty end and the sacredness of rebellion begin?" I hope you have learned the same lesson that transformed the character who asked that question: Neither tradition nor rebellion—in the form of innovative adaptations—has a beginning or an ending; both must be kept in tension. Both will insist on being dynamic parts of your experience as a writer.

Appendix: Gathering and Documenting Information

Following some introductory advice about using library sources to gather materials for a writing project, this appendix describes four major styles of documentation. A documentation style is a set of rules for noting your sources (making citations) and for supplying the bibliographic information that enables your readers to find those sources.

REASONS FOR DOCUMENTING AND CITING SOURCES — FUNDAMENTALS

Enabling readers to find the sources that you use is the primary reason for documenting your sources. Supplying the name(s) of the author(s) as well as the title and complete facts about publication ensures that a reader who wants to follow up on your work can easily find the information that you cite.

Your reasons for citing information in the first place are more complicated. At one time or another most writers face, and perhaps give in to, the temptation to cite big-name sources simply to make themselves look more knowledgeable. It takes very little time to run through a stack of important books or articles (which you can find in someone else's bibliography) and find a quote or two from each that you can squeeze into a paper. That's a dangerous game, however, because those quotes usually *appear* squeezed in, and if you don't understand the context from which you take them, you might twist their meaning in ways that make you look anything but knowledgeable.

Good reasons for citing sources include establishing the background for your writing and placing yourself within a community of people who may share common ideas or at least common grounds for debate.

Probably the most important reason for citing is to give credit to the people whose ideas, knowledge, or words you use. If you should ever be uncertain about when you should or should not cite a source in order to give credit, try this. Imagine that you are on a stage, reading your paper aloud. On stage with you are the authors of all the sources that you used while working on your paper. As you read a quotation from, say, George Schwartz, you will of course want to refer to him, or he is likely to stand up and claim that those are his words, not yours. Even if you paraphrase something that Schwartz wrote, he will know that you have taken his ideas without giving him credit, and he will be justifiably angry. However, if you find a piece of information in one of his books and it is something that all people in his field know, you would not cite him; if you did, he might be embarrassed, stopping you to say that he should not be given credit for something that is common knowledge. Imagining this kind of situation will usually help you to see when and why you need to cite a source.

DOCUMENTATION STYLES — TRADITIONS

The four documentation styles described in this appendix were chosen because they are widely used and represent a variety of styles. They do not always correspond, however, to the four disciplinary groups we have studied in this book.

The great majority of social science publications do use APA (American Psychological Association) style, and most publications in some fields within the humanities (literature and foreign languages) use MLA (Modern Language Association) style. But some literary journals as well as many publications in other humanities disciplines use the Chicago (CMS, Chicago Manual) style. Many journals in the natural sciences publish their own documentation style guides. Most of those, including publications in fields such as chemistry and physics, use some variety of one of the two styles described in the sixth edition of the CBE (Council of Biological Editors) manual. The two systems described in the CBE manual are the "citation-sequence" system, which is described in this appendix, and the "name-year" (also called "author-date" or "Harvard") system. (The name-year system from the CBE manual is not described here because it is quite similar to APA style.) Some business corporations may use CMS or MLA; some may use one style in the Marketing Department and another in Research and Development. Some businesses create their own style guides, and others allow individuals to use, or create, any documentation style they choose.

In short, the four styles described here will teach you about the variety of forms available, and among them you probably will find at least one that a teacher will accept. Do not, however, assume that documenting sources is one part of the writing process for which you need not prepare to adapt.

Not only will you encounter many varieties and hybrids of these four styles, but each of them will probably change during your career.

REASONS FOR DIFFERENCES IN DOCUMENTATION STYLES — ADAPTATIONS

As we have said throughout this book, the first and best preparation for adapting is understanding reasons for traditions. Some of the reasons for minor style differences are surely arbitrary. Some styles use commas in places where other styles use periods, for example, and we see no clear significance in that difference.

However, other differences among the styles, as well as changes over time within each individual style, can reveal or confirm distinguishing and evolving characteristics of a discipline. Until the early part of this century all citations were in footnotes (as still used in the Chicago style). Over the course of several decades, the APA and later the MLA shifted to parenthetical citations in the text. At first most of those parenthetical citations were simply numbers that referred to lists of sources printed at the end of a paper (as still used in the CBE style). In the 1950s the APA style changed to the current practice of placing the author's name and the date of the publication in a parenthetical citation. In the 1980s the MLA style shifted to parenthetical citations that include authors' names and page numbers. One consequence of placing an author's name within the text rather than in a footnote is that the name becomes part of the argument; an important person's name adds credibility.

The fact that the APA style includes a date and the MLA does not reminds us that despite similar historical developments styles in the disciplines continue to include important differences. Look, for example, at the current MLA and APA styles of citing a source within a paper. Each of these sentences includes one or more references to an author or authors who are not mentioned in the sentence.

MLA style

One critic argues that Dickens was driven by a "diabolical contempt for the social outcasts he claimed to have championed" (Stilton 54).

APA style

Gender equality in jobs requiring physical strength (Symons 1987) was later found to have undergone considerable change (Bevinton 1989; Sturkus and Jones 1990; Thompson 1990) before settling in the present state of tenuous equilibrium (Johns, et al. 1994).

Although both styles utilize parenthetical citations, the MLA style normally places such citations at the end of a sentence, whereas APA style regularly integrates them into a sentence. And, as in our example, there may be far more references in an APA than an MLA paper. It seems essential to include all appropriate citations in an APA paper, even at the cost of interruptions that render the sentence hard to read. To the social scientist, integrating a citation creates a set of validating contexts and is therefore of greater importance than fluid sentence style.

Perhaps the most significant difference is that the APA style includes the date of publication. The ideas of a literary critic may remain important for decades, even centuries, but scientific ideas must be current, so the date of publication is essential information that shapes a reader's judgment while reading a scientific paper.

Now consider MLA and APA styles for providing full publication information about a source in a bibliography (called a list of "Works Cited" in MLA style or "References" in APA and CBE styles). These are journal articles, each coauthored by a group of four people.

MLA style

Stilton, Avery, et al. "Dickens and the Deception of Social Concern." *Literature and Politics* 12.4 (1996): 41-66.

APA style

Symons, T., Bannon, G., Stent, P., & Wilson, J. (1987). Physical strength and its effects on perceptions of job competence. *Journal of Employment Sociology, 64* (4), 17-32.

Some of the differences (quotations around the title in MLA, capitalized letters for all major words in the title in MLA, italicizing the volume number in APA, and various differences in punctuation marks) seem arbitrary. That does not, however, give you leave to be careless about following every detail of the prescribed forms of whichever style you use.

Other details do seem to reveal telling differences. By placing the date next to the authors' names, the APA style clearly places greater emphasis on it than does the MLA—for the same reasons we noted when discussing in-text citations. The fact that the MLA style uses authors' full names rather than initials, as in APA, may affirm the humanities' heavier emphasis on the interpretations of individual humans. MLA does not, however, list even the last names of all the authors for a work written by four or more people; instead, it employs the abbreviation et al., for *et alii,* which means "and others." Groups of four or more people in the humanities rarely collaborate on a paper, but such collaboration is common in the sciences, and APA style names all the authors of such group projects.

You also notice that in the MLA sample the second line of the reference is indented (any additional lines after the second would also be indented; this is called a "hanging indentation"), but the APA style indents the first line. However, if you look at the References list in a journal that uses APA style, you will see that it uses hanging indentations. This is another result of the computer age. Editors found that it was easier to have their computer programs change manuscripts from a normal indentation to a hanging indentation than to have writers duplicate the hanging format. You will have to ask your individual teachers if they want you to follow the APA guidelines or produce Reference lists that look like those in APA publications.

I am telling the same story you have listened to throughout this book: Every part of the writing process, even one as strictly regimented as documentation, calls on you to understand reasons for traditional differences and thereby to prepare yourself to adapt.

LIBRARY RESEARCH

The information that follows is a general introduction to library resources; but resources and procedures differ from library to library, so read your library's introductory brochure or manual, and consult a library staff member whenever you have questions. *Guide to Reference Books,* by Eugene P. Sheehy, and *Guide to the Use of Libraries and Information Services,* edited by Jean Gates, also provide more information about reference materials.

Reference Works for Background Reading

After you have chosen a topic or had one assigned, write down what you already know about it (try **brainstorming, clustering,** or **free-writing**), and then make a list of the things you would like to learn. A good place to begin your research is in reference books: dictionaries, encyclopedias, almanacs, and atlases. Many of these are available in online and CD-Rom form as well as in print form. These sources provide definitions and overviews that can help fill the gaps in your knowledge, and they can direct you to related topics and other sources of information. After doing some background reading, you may decide to change the scope of your topic, which should be appropriate for the length of the paper and the time you have to write it. For example, suppose you began with the tentative topic of the effectiveness of advertising. After reading the general articles on advertising in encyclopedias and the relevant entries in the *Encyclopedia of Advertising,* you might decide to focus on the differences in the advertising of a particular product in publications addressed to different audiences.

Specialized Encyclopedias and Dictionaries In addition to general encyclopedias such as *Encyclopedia Americana* and *Encyclopaedia Britannica,* the library has specialized encyclopedias and dictionaries about a variety of fields, including literature (from classical to twentieth century), music (from opera to rock), economics, business, U.S. and world history, art, philosophy, physical education, science (from chemistry to computers), and the social sciences (from anthropology to sociology). The entries in these works not only provide a detailed overview of the topic but also usually end with a bibliography of authoritative sources. Some libraries keep these books in the reference section; others keep them in the appropriate subject area in the main stacks. Many of these references are also available online or as CD-ROMs.

Almanacs and Yearbooks For information about recent developments and up-to-date statistical data, the annual yearbook supplements of general encyclopedias, almanacs (such as *Information Please Almanac* and *World Almanac and Book of Facts*), and the following annual publications can be helpful.

Budget in Brief (summary of U.S. federal budget)

Demographic Yearbook (United Nations information on world economics and trade)

Facts on File Yearbook (weekly digest of world news)

Political Handbook of the World (Council on Foreign Affairs publication)

Statistical Yearbook (United Nations publication)

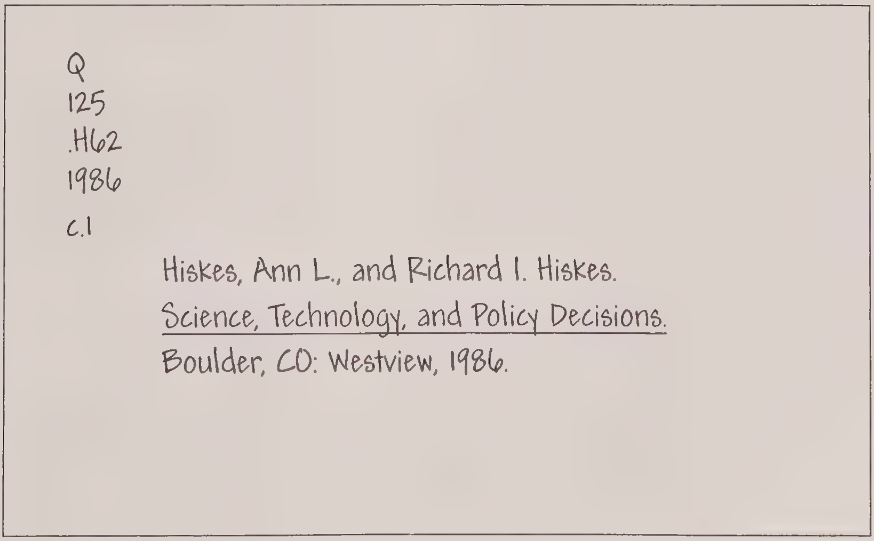
Statistical Abstract of the United States (U.S. Bureau of Census summary of industrial, political, social, and economic data)

Atlases As you do background reading, consult an atlas to locate any unfamiliar places. Your library contains not only general atlases of today's world but also historical atlases and specialized atlases, such as atlases of the oceans and of the universe.

Creating a Working Bibliography

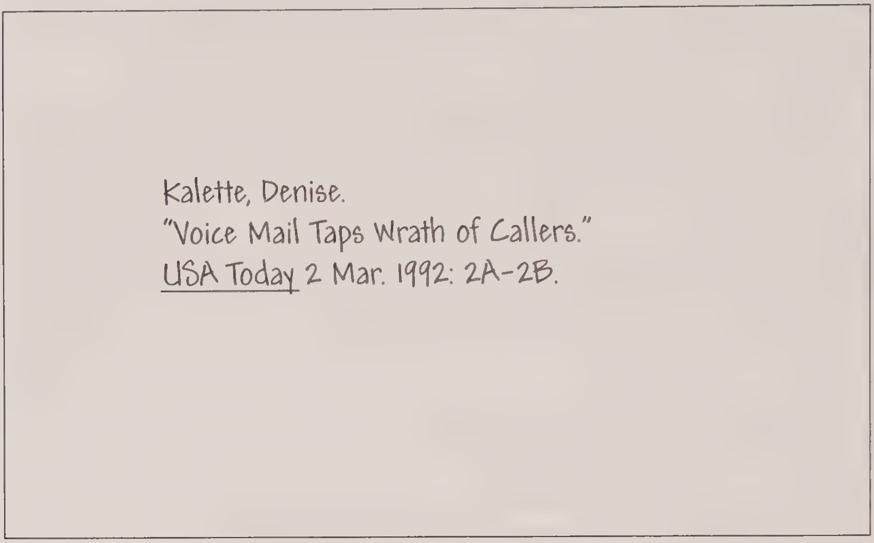
After you have defined your topic, you can begin to search for books and articles about it. As you look, create a *working bibliography*—a list of all the sources that may be relevant to your topic. Because not all sources are as good as they first appear and not all may be available in your library, a working bibliography will be much longer than your final list of works cited. For each source, write the title, author, publication information (publisher, city, year), and call number (if the source is a book) on a 3 × 5-inch card. (Figures 1 and 2 illustrate sample bibliography cards.) If you are using electronic

FIGURE 1. *Bibliography Card for a Book.*



Q
125
.H62
1986
c.1

Hiskes, Ann L., and Richard I. Hiskes.
Science, Technology, and Policy Decisions.
Boulder, CO: Westview, 1986.



Kalette, Denise.
"Voice Mail Taps Wrath of Callers."
USA Today 2 Mar. 1992: 2A-2B.

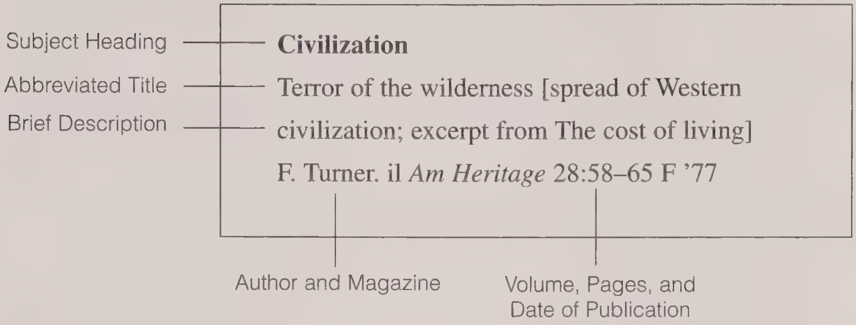
FIGURE 2. *Bibliography Card for a Periodical.*

databases, you may be able to print out the bibliographic information. When you are ready to compile the list of works cited in your paper, all you will need to do is alphabetize the cards for the sources you used and type the list. If you record the information according to the documentation style you will use for your list of works cited (see "Documentation and Manuscript Form," pages 461–525), you can make creating that list even simpler.

Periodicals

To locate current information about your topic, look in periodical indexes. The primary index for general-interest U.S. periodicals is the *Readers' Guide to Periodical Literature.* Most major daily newspapers are also indexed, and libraries usually have at least the *New York Times Index* and the *Wall Street Journal Index* as well as local newspapers.

Readers' Guide to Periodical Literature The *Readers' Guide* indexes articles from about 200 popular and general-interest magazines (from 1900 to the present). Articles are listed by subject and by author, and each entry includes an abbreviated title, the author's name, the name of the magazine, and the date of publication. (See Figure 3.) In addition, the *Readers' Guide* has thorough cross-references. A *see* entry means that articles are listed un-



Civilization
Terror of the wilderness [spread of Western civilization; excerpt from The cost of living]
F. Turner. il *Am Heritage* 28:58–65 F '77

FIGURE 3. *Readers' Guide Entry.*

der the subject heading to which the reader is being referred; a *see also* entry indicates subject headings under which the reader will find related articles.

You will need to copy all the bibliographical information in order to retrieve the article and to compile your working bibliography. Keep in mind, however, that the entries in the *Readers' Guide* do not follow the commonly used documentation styles (see "Documentation and Manuscript Form," pages 461–525). In your working bibliography, include the article's full title and the full name of the author and spell out abbreviations.

Specialized Indexes If you need more detailed and more technical information than that contained in general-interest periodicals, consult an index of journals and other publications in a specific field. Most of these indexes are available online and in CD-ROM form as well as in printed form. Usually at the front of each volume is a list of the publications indexed and the years covered, as well as a key to the abbreviations used in the entries. The following list is a sampling of special-subject indexes, collections of abstracts (most of which are published several times a year), and bibliographies.

Applied Science and Technology Index (1958–). Available online and on CD-ROM.

Art Index (1929–). Available online and on CD-ROM.

Business Periodicals Index (1958–). Available online and on CD-ROM.

Dissertation Abstracts International (1938–). Available on CD-ROM.

General Science Index (1978–). Available online and on CD-ROM.

Historical Abstracts (1955–). Available online and on CD-ROM.

Index Medicus (1960–). Available online and on CD-ROM as part of *MedLine.*

Index to Legal Periodicals (1908–). Available online and on CD-ROM.

MLA International Bibliography (1921–). Available online and on CD-ROM.

Music Index (1949–). Available on CD-ROM.

Psychological Abstracts (1927–). Available online as *PsychInfo* and on CD-ROM as *PsychLit.*

Subjects may not have the same heading in every index. For example, entries listed under "teenagers" in one index may be found under "young adults" in another. In order to get the most out of your search of specialized indexes, draw up a list of all the key words that might lead to information about your topic, and look up all of them. Good sources for subject headings are the *Readers' Guide to Periodical Literature*, the library's book catalog, and the *Library of Congress Subject Headings* directory (for more about *LCSH,* see page 458).

For descriptions of electronic periodicals, consult *Directory of Electronic Journals, Newsletters, and Academic Discussion Lists* (Washington, DC: Association of Research Librarians).

Citation Indexes A citation index can help you evaluate sources because it lists what has been written about a book or an article. To find out how reviewers received a particular book, for example, or to track the discussion about a scientific controversy, consult a citation index, such as one of the following.

Arts and Humanities Citation Index

Book Review Digest

Current Book Review Citations

Science Citation Index

Social Science Citation Index

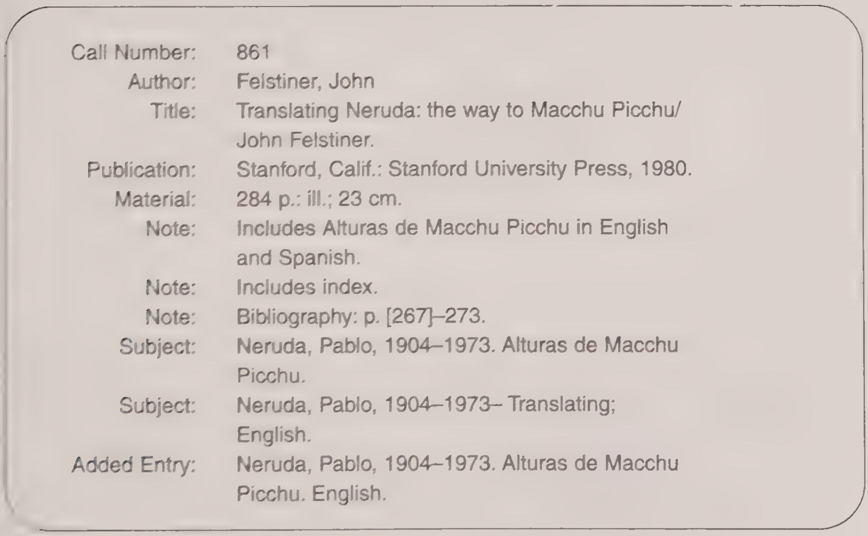
Locating Periodicals Libraries generally keep current issues in one place and back issues (which are bound in volumes or stored in microform) in another. If your library does not have some of the periodicals you need, you may be able to get them through interlibrary loan, a service that permits you to get photocopied periodical articles (as well as to borrow books) from other libraries. Consult a librarian for specific details of the interlibrary system.

The Central Catalog

Each book a library owns is listed in the central catalog, which is usually found near the reference or circulation section in card cabinets, in bound books, or on computer terminals. Online catalogs may also include periodicals indexes and other reference works.

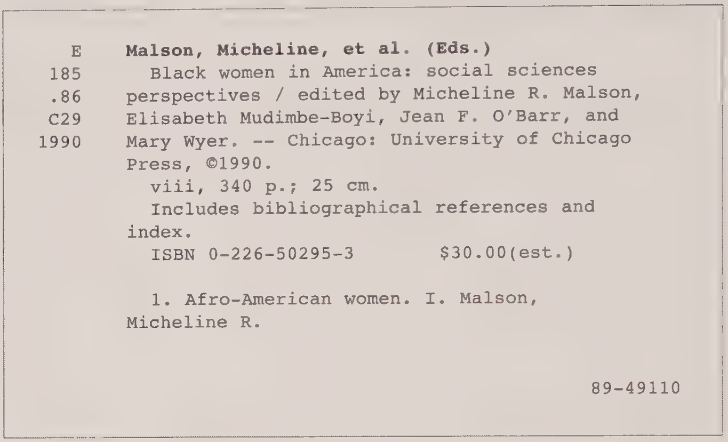
Figure 4 shows a typical screen listing for a computerized catalog. This information can be reached by typing in the command for subject, author, or title. Before you reach the screen with the detailed information about a holding, you will probably see a list of all the holdings by the same author, about the same subject, or following your title in an alphabetical list. After looking at the screen about the book you are seeking, you might want to check out the information for the related holdings on the list.

Books are cataloged in three ways: by *author*, by *title*, and by *subject*. (See Figures 5, 6, and 7.) Author listings are filed by the author's last name; title listings are filed by the first important word in the title (excluding *a*, *an*, and *the*); and subject listings are filed by the first word of the general subject. All three types of listings include the title, author, publisher, date and place of publication, number of pages, and major topics covered. The listings also note special features, such as an index, a bibliography, and illustrations. They also show other subject headings under which more information may be found on the topic.



Call Number: 861
Author: Felstiner, John
Title: Translating Neruda: the way to Macchu Picchu/ John Felstiner.
Publication: Stanford, Calif.: Stanford University Press, 1980.
Material: 284 p.: ill.; 23 cm.
Note: Includes Alturas de Macchu Picchu in English and Spanish.
Note: Includes index.
Note: Bibliography: p. [267]–273.
Subject: Neruda, Pablo, 1904–1973. Alturas de Macchu Picchu.
Subject: Neruda, Pablo, 1904–1973– Translating; English.
Added Entry: Neruda, Pablo, 1904–1973. Alturas de Macchu Picchu. English.

FIGURE 4. *Online-Catalog Screen.*



Call Number

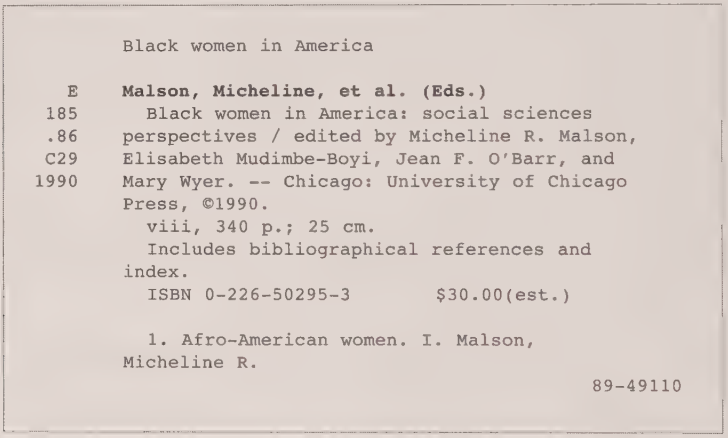
Physical Description

```
  E     Malson, Micheline, et al. (Eds.)
 185      Black women in America: social sciences
 .86    perspectives / edited by Micheline R. Malson,
 C29    Elisabeth Mudimbe-Boyi, Jean F. O'Barr, and
1990    Mary Wyer. -- Chicago: University of Chicago
        Press, ©1990.
          viii, 340 p.; 25 cm.
          Includes bibliographical references and
        index.
          ISBN 0-226-50295-3       $30.00(est.)

          1. Afro-American women. I. Malson,
        Micheline R.


                                             89-49110
```

FIGURE 5. *Author Card.*



Title and Publication Information

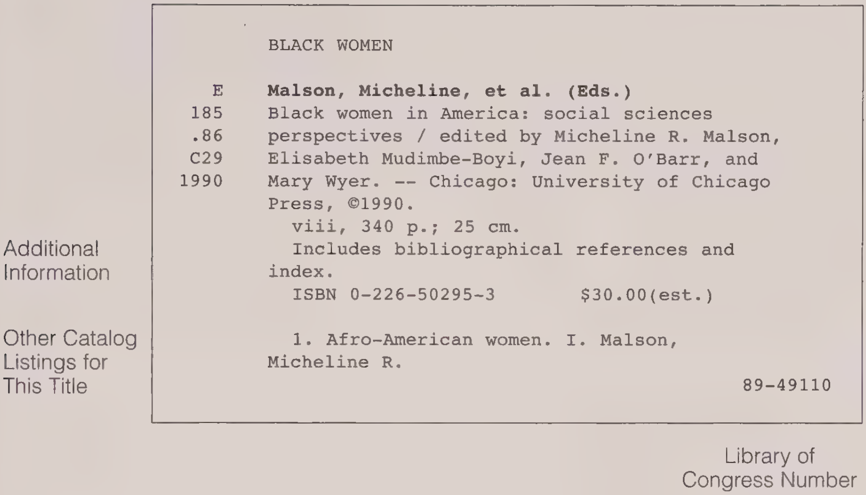
```
        Black women in America

  E     Malson, Micheline, et al. (Eds.)
 185      Black women in America: social sciences
 .86    perspectives / edited by Micheline R. Malson,
 C29    Elisabeth Mudimbe-Boyi, Jean F. O'Barr, and
1990    Mary Wyer. -- Chicago: University of Chicago
        Press, ©1990.
          viii, 340 p.; 25 cm.
          Includes bibliographical references and
        index.
          ISBN 0-226-50295-3       $30.00(est.)

          1. Afro-American women. I. Malson,
        Micheline R.
                                             89-49110
```

FIGURE 6. *Title Card.*

Library of Congress Subject Headings In order to ensure uniformity of subject headings, most libraries use the wording in the *Library of Congress Subject Headings (LCSH)*, a multivolume directory usually located near the book catalog or at the reference desk. Consulting the *LCSH* before starting to look through the catalog can save you a lot of time. For example, instead of "Native Americans" or "American Indians," *LCSH* uses the subject heading "Indians of North America." Because *LCSH* shows broader, narrower, and related terms with each subject heading, it can also help you focus your topic.



```
        BLACK WOMEN

   E    Malson, Micheline, et al. (Eds.)
 185    Black women in America: social sciences
 .86    perspectives / edited by Micheline R. Malson,
 C29    Elisabeth Mudimbe-Boyi, Jean F. O'Barr, and
1990    Mary Wyer. -- Chicago: University of Chicago
        Press, ©1990.
          viii, 340 p.; 25 cm.
          Includes bibliographical references and
        index.
          ISBN 0-226-50295-3       $30.00(est.)

          1. Afro-American women. I. Malson,
        Micheline R.
                                            89-49110
```

Additional Information
Other Catalog Listings for This Title
Library of Congress Number

FIGURE 7. *Subject Card.*

Library Classification Systems Each book's location is identified by a call number; the same number is written on the book's spine. To find books about a particular topic, you can either browse through the shelves housing books with the appropriate call number or you can look through the central catalog entries with that subject heading. Call numbers are usually assigned according to the Library of Congress system or the Dewey decimal system. Ask a librarian for a list of your library's classifications.

The Library of Congress system uses letters to identify twenty major subject categories.

A	general works
B	philosophy and religion
C	history and auxiliary sciences
D	universal history and topography
E/F	American history
G	geography, anthropology, folklore
H	social sciences
J	political science
K	law
L	education
M	music
N	fine arts
P	language and literature
Q	Science
R	medicine
S	agriculture
T	technology
U	military service
V	naval service
Z	library science and bibliography

Subcategories are represented by a second letter. For example, TL in the technology category (T) represents books about motor vehicles, aeronautics, and astronautics, and TT marks books about handicrafts and arts and crafts.

The Dewey decimal system uses numbers to identify ten major subject categories.

000–099	general works
100–199	philosophy
200–299	religion
300–399	social sciences
400–499	language
500–599	pure sciences
600–699	technology (applied sciences)
700–799	fine arts
800–899	literature
900–999	history

Each of these general categories is divided into ten subcategories. For example, 610–619 in the technology category (600–699) is for books in medical sciences, and 640–649 is for books about home economics.

Publishing Bibliographies and Interlibrary Loans If you cannot find a particular book or periodical in your library, consult a publishing bibliography to see if it is still in print and to find out its publication information. These reference books are a useful adjunct to the central catalog, because books and periodicals that are not in your library's collection may be available from another library through an interlibrary loan. Ask a librarian for more information.

Books in Print (U.S. books indexed by author, title, and subject; issued annually, with supplements)

Cumulative Book Index (all books published in English indexed by author, title, and subject; issued annually, with supplements)

Monthly Catalog of U.S. Government Publications (nonclassified publications of all federal agencies by subject, author, title, report number, and ordering instructions)

Ulrich's International Periodicals Directory (serial publications throughout the world; issued annually, with supplements)

Computer Search Services

In addition to the central catalog, periodical indexes, and reference books, many libraries offer a computer search service, such as DIALOG, which can provide a computer printout of citations about your subject. Databases are available in English, education, medicine, business, psychology, biology, management, engineering, environmental studies, and many other subjects. Computer search services are usually located in the reference section of the library, and reference librarians can provide information about the range of subjects in the database, the types and cost of search services, and procedures for using the service.

DOCUMENTATION AND MANUSCRIPT FORM

Documentation is the giving of credit to sources used or quoted in a research paper, journal article, book, or other document. Full and accurate documentation prevents **plagiarism** and allows readers to locate and consult the sources cited. All facts and ideas that are not common knowledge should be documented, as should all direct quotations. When you edit your paper, make sure that all quotations and ideas from other sources are documented and that the in-text citations correspond to entries in the list of references or works cited.

The following pages provide examples of the four styles of documentation most frequently used in undergraduate courses: MLA (Modern Language Association of America) style for arts and humanities courses, APA (American Psychological Association) style for social science courses, CMS (Chicago Manual) style for history and humanities courses, and CBE (Council of Biology Editors) style for life sciences. A complete sample research paper in MLA style appears on pages 478–86. The manuscript form for the other three styles is illustrated with sample pages.

Many other professional organizations and journals also publish style manuals that describe documentation formats used in other disciplines. A list of such style manuals appears on page 531. Ask your instructor which style to use, and follow it consistently, in every detail of order, punctuation, and capitalization.

MLA Style

The *MLA Handbook for Writers of Research Papers,* 4th ed. (1995), recommends a system of brief in-text citations that refer to a list of works cited (with full publication information) at the end of the paper.

MLA In-Text Citations

Parenthetical in-text citations should not distract the reader, but they must be complete enough to allow the reader to easily locate the corresponding entry in the list of works cited. The best place for a citation is just before the final punctuation of the sentence. If that is not appropriate, put the citation before a comma or other internal punctuation or, if nothing else is possible, before a natural pause in the sentence. The following examples illustrate the MLA style of in-text citation.

1. *Author named in text.* In parentheses, provide the page number of the source. (With block quotations, enclose the page number in parentheses one space after the last punctuation mark.) If you are citing a source that uses paragraph numbers rather than page numbers, such as an electronic journal, precede the numbers with the abbreviation "par." or "pars."

> According to Tompkins, critics who admire Cooper find themselves in a bind: They must attempt to diminish the embarrassing (and major) features of the novels, or they must alter their standards for evaluating works of literature (98).

If the list of works cited contains two authors with the same last name, include the first initial or first name of each one in the in-text citations.

2. *Author not named in text.* In parentheses, give both the author's last name and the page number, separated by one space. (With block quotations, place the parenthetical citation one space after the last punctuation mark.) If you are citing paragraph numbers from an electronic source rather than page numbers, place a comma after the author's name and use the abbreviation "par." or "pars."

> The Last of the Mohicans presents a dilemma for literary critics; even when they are sympathetic, they "have been hard put to explain why they should continue to be fascinated by a novel which, by their own accounts, is replete with sensationalism and cliché" (Tompkins 95).

3. *More than one author.* If the source has no more than three authors, name them all in the text or the parenthetical citation. If the source has more than three authors, list them all or use only the first author's name followed by "et al." (the abbreviation for the Latin "and others").

> McCrum, Cran, and MacNeil call the development of the English language "the story of three invasions and a cultural revolution" (51).

4. *Author of two or more works cited.* If the list of works cited includes more than one work by the same author, the source must be identified by both the author's name and a short version of the title. (The full title for this example is *Sensational Designs: The Cultural Work of American Fiction 1790–1860.*)

> Certain nineteenth-century American novels, despite critical consensus that they are short on literary merit, played an important role by "providing society with a means of thinking about itself" (Tompkins, Sensational 200).

5. *Corporate author or government agency.* The corporate or agency name should match the entry in the list of works cited. For example, if the works cited entry begins with "United States. Department of Commerce," the in-text citation should be "U.S. Department of Commerce" rather than "Commerce Department."

> Chicago Women in Publishing recommends that workers' titles "be described in a way that indicates the job could be filled by a member of either sex" (U.S. Department of Commerce 10).

6. *Unknown author.* If the source is not signed (a brief article in a newspaper or magazine, for example), use its full title or a shortened version in the citation. A short title should begin with the same word as the full title so that the work can be located in the list of works cited; for example, the title in the example below could be shortened to "Can Your Mind Heal?" but not to "Mind/Body."

> Both physicians and entrepreneurs have recently become interested in how the mind can affect physical health ("Can Your Mind Heal Your Body?" 107).

7. *An entire work.* If you are referring to an entire work rather than to a specific passage, no page number is necessary in the in-text citation.

> Tompkins's eloquent argument is this: American literature gives its readers nothing less than a means of comprehending their history and constructing their social consciences.

8. *A multivolume work.* If you consulted a multivolume work in your research, the in-text citation must include the volume number (followed by a colon) as well as the page number.

> Like the paintings of Braque, Dali, and Picasso, the compositions of Stravinsky and Schoenberg come from the intellect, not the emotions (Hauser 4: 230).

9. *A literary work.* When you are quoting from a literary work that has been published in many editions, include information that will enable the reader to locate the passage in any edition.

For novels, first give the page number and, after a semicolon, add the chapter or part number.

> Fifty years ago, Richard Wright wrote, "Who knows when some slight shock, disturbing the delicate balance between social order and thirsty aspiration, shall send the skyscrapers in our cities tumbling?" (Native Son 25; bk. 1).

For poems, cite only the line number (or numbers); a page number is unnecessary. Use a dash to indicate inclusive lines.

> In earlier parts of "In Just-" e. e. cummings's darker references to "the little/ lame balloonman" (4-5) and to "the queer /old balloonman" (11-12) have prepared us for the perhaps not-so-innocent "goat-footed / balloonMan" of the poem's conclusion (20-21).

For prose plays, give the page number and then, following a semicolon, the number of the act and the scene (43; 1, 3—use Arabic numerals unless your instructor specifies a preference for roman numerals). For verse plays, omit the page number but include the line number (or numbers) and separate the act, scene, and line number with periods.

> The 1970s musical Hair turned Hamlet's musings--"What a piece of work is man! How noble in reason!" (2.2.320)--into a song.

10. *An indirect source.* To show that a quotation in your paper was also a quotation in your source (rather than written by the source's author), use the abbreviation "qtd. in" ("quoted in"). In the list of works cited, include only the source you consulted (which would be Trimbur in the following example).

> Kenneth Bruffee observed, "While students often forget much of the subject matter shortly after class is over, they do not easily forget the values implicit in the conventions by which it was taught" (qtd. in Trimbur 95).

11. *More than one source.* If a point has two or more sources, separate them with a semicolon.

> Critics have long had difficulty justifying serious consideration of the works of James Fenimore Cooper (Reynolds 102; Tompkins 98).

MLA Information Notes

You may use a few brief numbered notes in addition to the parenthetical citations if you need to comment on a source or to include information that is necessary but would interrupt the flow of the text. Use an arabic numeral raised above the line after the final punctuation of a sentence, and number the notes consecutively throughout the paper. Place the notes themselves, with the centered title *Notes*, on a separate page before the list of works cited (or, if your instructor so specifies, as footnotes at the bottom of the pages on which the corresponding raised numbers appear in the text). Indent the first line of each note half an inch (or five spaces if you are using a typewriter) and begin it with a raised number without punctuation. If the note is longer than one line, the second and subsequent lines begin at the left margin. Double-space within and between the notes. (Footnotes are single-spaced with double spaces between notes and begin four lines—two double spaces—below the text.)

TEXT	Critics have long had difficulty justifying serious consideration of the works of James Fenimore Cooper.[1]
NOTE	[1] Reportedly, however, scholarly studies of Cooper are planned by several university presses.

MLA List of Works Cited

Beginning on a separate page at the end of your paper, list in alphabetical order all the sources you cite and give full publishing information for them. Title the list *Works Cited* and center this heading an inch from the top of the paper. Double-space both within and between entries, and indent the second and subsequent lines of each entry half an inch (or five spaces if you are using a typewriter).

BOOKS

Book entries have three parts, and each one ends with a period. The first part is the author's name; the second is the title and subtitle (which are italicized or underlined); and the third part is the publishing information (place of publication, publisher, and year). You will find all this information on the book's title page and copyright page.

Use a short version of the publisher's name (Harcourt for Harcourt Brace & Co., and Beacon for Beacon Press, Inc., for example). If an abbreviation for the publisher's name is familiar to your audience, use it (such as GPO for Government Printing Office, and ALA for American Library Association). Use the abbreviation UP for University Press.

1. *Book with one author.*

Boorstin, Daniel J. The Discoverers. New York: Random, 1983.

2. *Book with two or three authors.* List authors' names in the order they appear on the title page. Invert the first author's name (to alphabetize); enter the coauthors' names in regular order (first name, last name) and separate them with commas. (Write out *and* before the name of the last author rather than using an **ampersand.**)

Gilbert, Sandra, and Susan Gubar. The Madwoman in the Attic: The Woman Writer and the Nineteenth-Century Literary Imagination. New Haven: Yale UP, 1979.

3. *Book with more than three authors.* Give all the authors' (or editors') names (with only the first one inverted) or include only the name of the first author followed by the abbreviation "et al." (for the Latin "and others").

Malson, Micheline R., et al., eds. Black Women in America: Social Science Perspectives. Chicago: U of Chicago P, 1990.

4. *Two or more books by the same author.* List the author's name in the first reference only. For succeeding references, instead of the author's name, enter three hyphens (---) followed by a period and one space, and then enter the title of the work. Alphabetize works by the same author by the first significant word in the title (omit the articles *a, an,* and *the*).

Brophy, Brigid. Beardsley and His World. New York: Harmony, 1976.

---. Black & White: A Portrait of Aubrey Beardsley. New York: Stein and Day, 1969.

5. *Book by a corporate author.* Alphabetize the entry by the name of the corporation or institution.

CompuServe Incorporated. CompuServe Information Service: User's Guide. Columbus, OH: CompuServe, 1985.

6. *Book with editor or editors.* Follow the first name with a comma and the abbreviation "ed." (for "editor").

Van Thal, Herbert, ed. The Mammoth Book of Great Detective Stories. London: Robinson, 1985.

7. *Book with author and editor.* Give the author's name (in inverted order) before the title; give the editor's name (in normal order) after it, preceded by the abbreviation "Ed." (for "Edited by").

James, Henry. Selected Fiction. Ed. Leon Edel. New York: Dutton, 1953.

8. *Translated work.* Give the author's name (in inverted order) before the title; give the translator's name (in normal order) after it, preceded by the abbreviation "Trans." (for "Translated by").

García Márquez, Gabriel. One Hundred Years of Solitude. Trans. Gregory Rabassa. New York: Harper, 1970.

9. *Book without listed author.* Alphabetize the book by the first significant word in the title (omit the articles *a, an,* and *the*).

Waterstone's Guide to Books. London: Waterstone, 1981.

10. *Book edition, if not the first.* Place the abbreviated edition number ("Rev. ed." or "2nd ed.," for example) after the period following the title.

Kiniry, Malcolm, and Mike Rose. Critical Strategies for Academic Thinking and Writing. 2nd ed. Boston: Bedford, 1993.

11. *Republished book.* Place the original publication date after the title. Separate it from the publication information with a period.

Faulkner, William. The Sound and the Fury. 1929. New York: Vintage-Random, 1946.

12. *Multivolume series.* List the total number of volumes after the title of the work. Use arabic numerals. If you used only one volume of the series in your research, identify that volume at the end of the entry.

Sewall, Richard B. The Life of Emily Dickinson. 2 vols. New York: Farrar, 1974. Vol. 1.

13. *Selection in an anthology or edited book.* Give the author and title of the selection and then the title of the collection or anthology in which it appears and the editor or editors of the volume (preceded by "Ed." for "Edited by"). Include the page numbers of the selection.

Gordimer, Nadine. "The Bridegroom." African Short Stories. Ed. Chinua Achebe and C. L. Innes. London: Heinemann, 1985. 155-63.

14. *Article in a reference work.* If the article is signed, begin with the author's name; if it is unsigned, begin with its title, followed by the title of the work. If the articles in the reference work are listed alphabetically, omit the volume number (if any) and page numbers.

Levison, Sanford. "Supreme Court." The Reader's Guide to American History. Ed. Eric Foner and John A. Garraty. Boston: Houghton, 1991.

15. *Foreword, introduction, preface, or afterword.* If you quote or use information from one of these elements, cite the name of the author of that element, followed by the name of the element (do not underline it or put it in quotation marks). The names of the author, editor, and translator (if any) follow the title. The page numbers of the element go after the publication information.

Weir, Charles I., Jr. Introduction. Madame Bovary. By Gustave Flaubert. Trans. Eleanor Marx Aveling. New York: Holt, 1948. vii-xii.

16. *Dissertation.* For an unpublished dissertation, enclose the title in quotation marks. Follow with the name of the degree-granting institution and the date. For a published dissertation, underline the title and add publishing information (place of publication, publisher's name, and year) at the end of the entry.

Marks, Barry Alan. "The Idea of Propaganda in America." Diss. U of Minnesota, 1957.

PERIODICALS

Entries for articles from periodicals have three parts, and each one ends with a period. The first part is the author's name; the second is the title of the article (which is enclosed in quotation marks); and the third part is the title of the periodical (which is italicized or underlined), the publication information—such as the volume number and the date of publication (followed by a colon and a space)—and the page numbers.

17. *Article in a monthly magazine.* Abbreviate all months except May, June, and July; for the abbreviations of months, see **abbreviations.** (Note that when the title ends with a question mark or an exclamation point, it is not followed by a period.) If an article is continued from its first page to a nonconsecutive page, give only the first page followed (without a space) by a + sign.

Lapham, Lewis. "Who and What Is American?" Harper's Jan. 1992: 43-49.

18. *Article in a weekly magazine.* The format is the same as that for a monthly magazine, except that the publication information includes the day as well as the month and the year.

Smolowe, Jill. "A Voice of Holy War." Time 15 Mar. 1993: 31-34.

19. *Article in a journal paginated annually by volume.* For journals whose pagination is continuous throughout each annual volume, follow the journal name with the volume number, the year (in parentheses followed by a colon), and the page numbers.

Keesing, Roger M. "Exotic Readings of Cultural Texts." Current Anthropology 30 (1989): 459-69.

20. *Article in a journal paginated by issue.* For journals that begin each issue with page 1, give the volume number (followed by a period), the issue number, the date (in parentheses followed by a colon), and the page numbers.

Danto, Arthur C. "Narratives of the End of Art." Grand Street 8.3 (1989): 166-81.

21. *Article in a newspaper.* The entry follows the format of an entry for a weekly magazine (see example 18), with the addition of the number or letter, if any, of the section in which the article is found. If an edition is given on the newspaper's masthead, specify the edition, preceded by a comma, after the date.

Perkins, Ken Parish. "Portrait of an Early Black Community." San Francisco Examiner 3 Apr. 1993: C3.

When the section is identified by number rather than letter, use the following format.

Sciolino, Elaine. "Russia May Be a Spectacle Beyond Release." New York Times 14 Mar. 1993, sec. 4: 1.

22. *Unsigned article.* Use the form for the appropriate kind of periodical, but begin with the article title and alphabetize the entry according to the first main word in the title. Use a shortened form of the title in the in-text citation.

"Can Your Mind Heal Your Body?" Consumer Reports Feb. 1993: 107-10.

23. *Review.* List the reviewer's name, followed by the abbreviation "Rev. of" (for "Review of") and the title of the reviewed work. Separate the title from the author of the work with a comma and the word "by."

Dana, Robert. Rev. of After Henry. by Joan Didion. The Georgia Review 46 (1992): 799-802.

24. *Editorial.* Begin with the title of the editorial (if it is signed, begin with the author's name). Follow the title with a period and then the word "Editorial," followed by a period. Give the day, month, and year of the newspaper, followed by the section and page number on which the editorial appears.

"Cruelty and Justice in Glen Ridge." Editorial. New York Times 18 Mar. 1993: A22.

25. *Letter to the editor.* Follow the writer's name with a period and the word "Letter," followed by a period.

Rapier, F. Link. Letter. Premiere Apr. 1993: 20.

ELECTRONIC SOURCES

In general, documentation for electronic publications is similar to that for publications in print, but some additional information must be included so that the electronic data can be retrieved.

26. *CD-ROMs and other portable databases.* Provide the author, title, publisher, and date information as you would for a print source. Then add the name of the database (underlined), and identify the medium (such as CD-ROM, diskette, or magnetic tape). In addition, if the vendor or distributor (such as Information Access or SilverPlatter) is not the same as the pub-

lisher, include the name of the vendor after the name of the medium. Finally, for portable databases that are updated quarterly or annually, provide both the date of the original publication of the material and the release date of the particular database version you are using.

The Civil War: A Newspaper Perspective. Nashville: Folio, 1990. CD-ROM. Accessible Archives, 1994.

27. *Online databases.* For material that can be accessed only through a computer service or a telecommunications network, provide the author, title, publisher, and date information as you would for a print source. Then add the title of the database (underlined), the publication medium (Online), the name of the computer service or network (such as Dialog, CompuServe, or Nexis), and the date of access.

Albert, Sam. "Cyberspace: A World in Search of a Metaphor." 13 Apr. 1995. Redgate. Online. America Online. 3 May 1995.

Entries for electronic journals and texts accessed through a computer network may also include the electronic address at the end of the citation. To indicate the length of an unpaginated online source, use the number of paragraphs (after the date and a colon), and in in-text citations indicate the location of particular passages by using paragraph numbers.

Sengers, Phoebe. "Breakdown." Surfaces 4.5 (Dec. 1994): 25 pp. Online. Internet. 14 Apr. 1994. Available FTP: harfang.cc.umontreal.ca.

OTHER SOURCES

28. *Government document.* If an author is not listed, begin with the name of the government (followed by a period) and the name of the agency (which may be abbreviated).

United States. Dept. of State. Foreign Relations of the United States: Diplomatic Papers--The Conferences of Cairo and Tehran 1943. Washington: GPO, 1961.

29. *Pamphlet.* Cite a pamphlet as you would a book. If the pamphlet has no listed author, begin with the title.

This Is Apartheid: A Pictorial Introduction. London: Intl. Defence & Aid Fund, 1978.

30. *Interview, unpublished.* Give the name of the person interviewed and the date of the interview.

Douglas, Guy. Personal interview. 5 Aug. 1991.

31. *Interview, published or broadcast.* Begin with the name of the person interviewed, followed by the title of the interview (if it is untitled, write the word "Interview"—do not underline or italicize it or enclose it in quotation marks). Give the name of the interviewer after the title of the interview.

Levine, Philip. "A Conversation with Philip Levine." By Howard Norman. Ploughshares 10.4 (1984): 11-22.

For a broadcast interview, include the name of the program and information about the broadcast.

Smith, Anna Deavere. Interview. Fresh Air. Natl. Public Radio. KQED, San Francisco. 6 Aug. 1992.

32. *Letter or e-mail, unpublished.* To cite a letter or e-mail message written to you, begin with the writer's name followed by the phrase "Letter (E-mail) to the author" and the date. End each element with a period.

Parnell, George. E-mail to the author. 21 Sept. 1994.

33. *Letter, published.* Follow the writer's name with the words "Letter to" and the name of the recipient. Give the date on which the letter was written, and then identify the source in which it was published.

William, Rose. Letter to Allettie Mosher. 27 Sept. 1885. In To All Inquiring Friends: Letters, Diaries and Essays in North Dakota. Ed. Elizabeth Hampsten. Grand Forks, ND: Dept. of English, U of North Dakota, 1979. n.p.

34. *Lecture or public address.* In addition to the speaker's name and the title of the address (in quotation marks), give the title of the meeting, the name of the sponsoring organization, the location, and the date.

Denmark, Florence L. "The Psychology of Women: Examining the Past--Predicting the Future." Ninety-Ninth Annual Convention. Amer. Psychological Assn. San Francisco, 17 Aug. 1992.

35. *Film or video recording.* Give the title and the director, as well as the distributor and year of release. You may add other information, such as the names of leading cast members. If you are citing the contribution of a particular person, begin the entry with his or her name.

For a video recording, add the original release date (if pertinent) and the medium before the distributor.

> Howard's End. Dir. James Ivory. Perf. Emma Thompson, Anthony Hopkins, and Vanessa Redgrave. Videocassette. Merchant Ivory, 1992.

36. *Television or radio program.* Give the title, network, producer, location, and date. You may add other relevant information, such as performers or director. If the reference is to the work of a particular individual, cite that person's name before the title.

> "The Mission." Neighborhoods: The Hidden Cities of San Francisco. Narr. Isabel Allende. Prod. Pam Rorke Levy. PBS. KQED, San Francisco. 12 Dec. 1994.

37. *Recording.* Give the composer, performer, conductor, and title of the recording, starting with the person being emphasized. If you are not citing a compact disc, indicate the medium (*Audiocassette, Audiotape,* or *LP*) before the manufacturer's name and year of issue. Underline the titles of records; enclose names of songs in quotation marks.

> Kern, Jerome. Showboat. Perf. Frederica von Stade, Jerry Hadley, and Teresa Stratas. Cond. John McGlinn. London Sinfonietta and the Ambrosian Chorus. Angel, 1988.

38. *Live performance.* To cite a performance of a play, concert, ballet, or opera, usually begin with the title and include information similar to that for a film (see example 35). If you are citing the contribution of a particular person—such as an actor, a director, or a choreographer—begin with that person's name instead.

> La Virgen de Tepeyac. Adap. Luis Valdez. Dir. Rosa Maria Escalante. El Teatro Campesino. Cowell Theater, San Francisco. 20 Dec. 1992.

39. *Work of art.* Italicize or underline the title of a work of art, and include the institution and city where the work is located.

Nevelson, Louise. Cathedral. Museum of Modern Art, New York.

40. *Advertisement.* Give the name of the product or company that is the subject of the advertisement, followed by the label *Advertisement.* Conclude with the publication or broadcast information.

Apple Power Macintosh. Advertisement. Newsweek 27 Feb. 1996: 4-5.

41. *Map or other illustration.* Follow the title of the illustration (italicized or underlined) with a descriptive label, such as "Map" or "Table." Then give the source of the illustration, including the page number (if there is one). If the creator of the illustration is credited, begin the entry with that name.

Cambodia 1972. Map. Sideshow: Kissinger, Nixon and the Destruction of Cambodia. By William Shawcross. New York: Simon, 1979. 254.

42. *Legal source.* An entry for a court decision includes the names of the plaintiff and defendant (any word after the first one may be abbreviated); the volume, name (abbreviated and not underlined), and page of the law report cited; the name of the court that decided the case (if it was the Supreme Court, no name is necessary); and the year of the decision.

Brown v. Board of Ed. 347 U.S. 483. 1954.

In the in-text citation, the name of the case is underlined: Brown v. Board of Ed.

An entry for a law or statute includes its name, its Public Law number, the date it was enacted, and its Statute at Large cataloging number (if it has been codified).

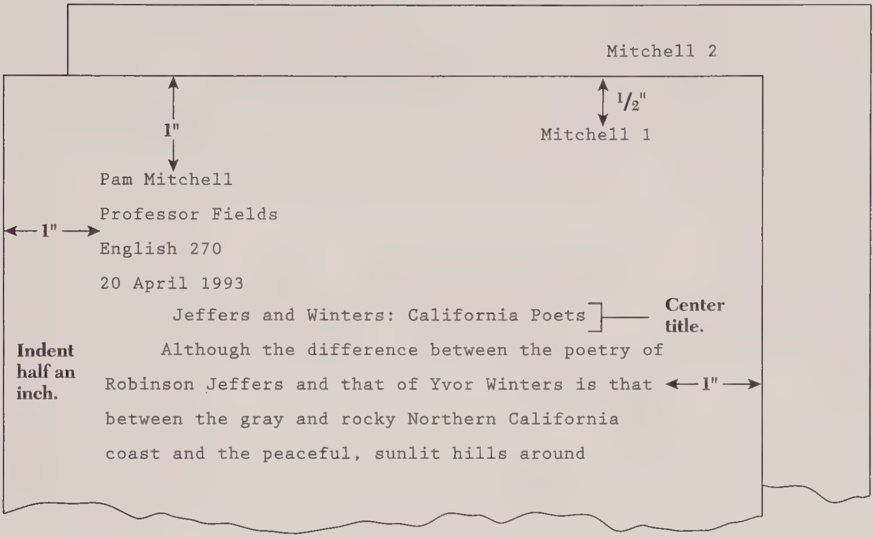
Atomic Energy Act of 1946. Pub. L. 585. 1 Aug. 1946. Stat. 60.767.

Names of laws are not underlined in in-text citations.

For papers with many legal citations, consult *The Bluebook: A Uniform System of Citation,* 15th ed. (Harvard Law Review Assn., 1991).

MLA Manuscript Form

MLA style covers aspects of the appearance of the finished manuscript. (See Figure 8.)



Mitchell 2

Mitchell 1

Pam Mitchell

Professor Fields

English 270

20 April 1993

Jeffers and Winters: California Poets

Although the difference between the poetry of Robinson Jeffers and that of Yvor Winters is that between the gray and rocky Northern California coast and the peaceful, sunlit hills around

FIGURE 8. *MLA Manuscript Format: First Page.*

Margins Leave one inch at the top, the bottom, and the sides.

First Page: Heading and Title Put the heading and the title of the paper at the top of the first page, rather than making a separate title page. Starting one inch from the top of the page and flush with the left margin, type your name, the instructor's name, the course name and number, and the date, double-spaced on separate lines.

Double-space again and center the title. Do not underline the title (except for words you would underline in the text, such as book titles), enclose it in quotation marks, or type it in all capital letters. Follow MLA's conventions of capitalization for titles: Capitalize the first and last words, the first word after a colon, and all principal words (including those following the hyphen in compound words); do not capitalize articles, prepositions, coordinating conjunctions, or the *to* marking infinitives.

Double-space between the title and the first line of the text.

Page Numbers Starting with the first page, number all pages consecutively in the upper right-hand corner, half an inch from the top of the page and flush with the right margin. Type your last name before the page number so that, if a page is mislaid, it can be easily identified.

Corrections and Insertions If you are using a word processor, proofread the final draft carefully and reprint the corrected pages. If you are not using a computer and your instructor permits minor corrections, type them (or write them neatly in ink) directly above the line and use **carets** (ˆ) to indicate where they go. Do not write corrections in the margins or below the line. Retype pages that have more than a few corrections.

Block Quotations A prose quotation longer than four typed lines should be set off from the rest of the text. Indent it one inch (or ten spaces) from the left margin and double-space it. Do not add quotation marks. If the quotation is only one paragraph or part of one, do not indent the first line. If the quotation is two or more paragraphs, indent the first line of each paragraph an additional quarter inch (or three spaces), unless the first sentence quoted is not the beginning of a paragraph. The in-text citation (often only the page number) is added after the final punctuation mark of the quotation.

> The high-minded Plutarch, who knew little if anything about the real character of Archimedes, assigned him a personality so esoteric that it became laughable:
>
> > Thus, one cannot doubt what has been said about Archimedes, that he was always bewitched by some familiar and domestic siren so that he would forget to eat his food and neglect the care of his person, that when forcibly dragged to be bathed and to have his body anointed and perfumed he would draw geometric figures in the ashes of the fire, and that when his body was oiled he would trace diagrams on it with his finger, for he was truly possessed by the Muses. (Marcellus 17.3-7)

A verse quotation longer than three lines should be set off from the text. Indent the lines one inch (or ten spaces) from the margin and double-space them. (If the lines are too long to permit a one-inch indentation, reduce the indentation, or continue on the next line and indent the continuation an additional quarter inch—or three spaces). If the lines are indented irregularly (as in the following example), reproduce the indentation of the original as closely as possible. A quotation that begins in the middle of a line of verse should not be shifted to the left margin.

The in-text citation (usually the line numbers of the poem) is added after the final punctuation mark of the quotation. If the last line of verse is too long to allow for the addition of the parenthetical reference, put it on the next line, flush with the right margin.

> Among images of childlike innocence in the earlier parts of the poem--such as "mud-luscious" and "puddle-wonderful"--the darker references to "the little / lame balloonman" (lines 3-4) and "the queer /old balloonman" (lines 11-12) have prepared us for the perhaps not so innocent "goat-footed / balloonMan" of the poem's conclusion:
>
> it's
> spring
> and
>   the
>   goat-footed
> balloonMan   whistles
> far
> and
> wee (16-24)

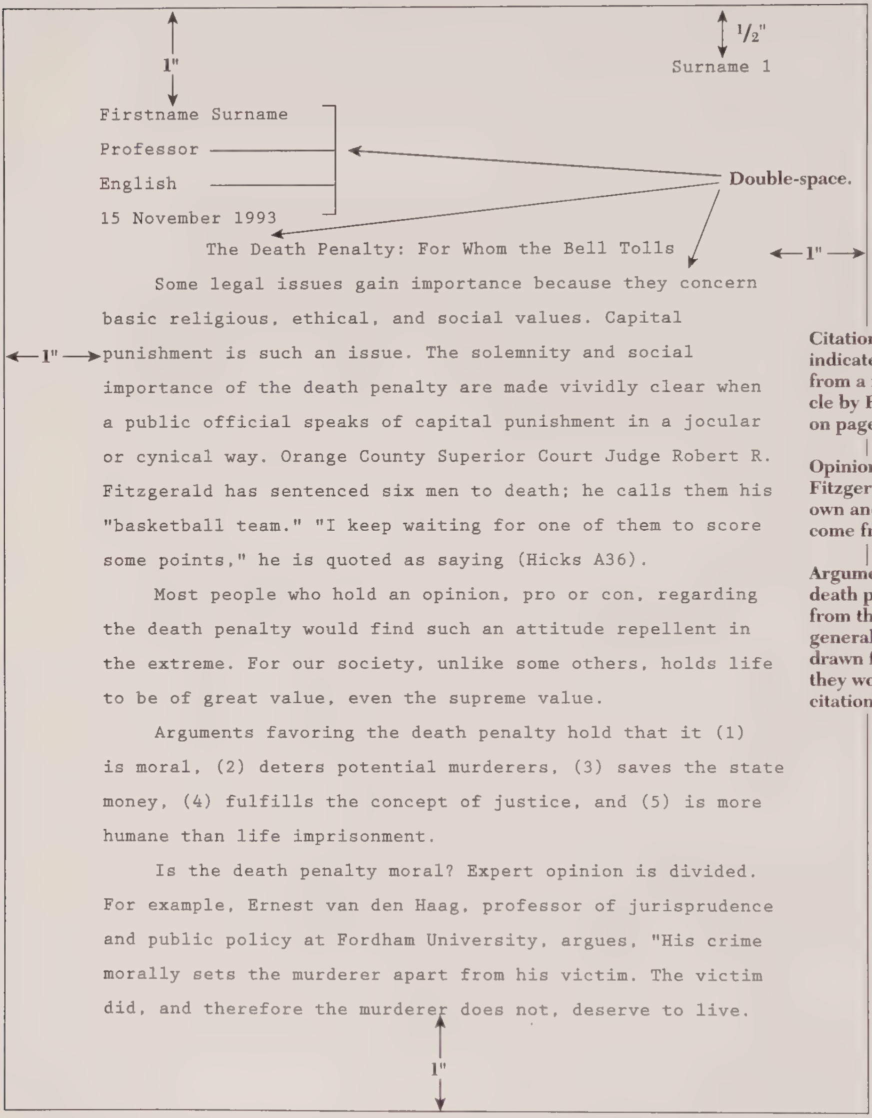
Sample MLA Research Paper

On the following pages is a sample research paper that uses MLA manuscript form and documentation style.

- The author's name, the class information, and the date are at the top of the first page above the title.
- The title is centered on the page.
- The paper is double-spaced throughout.
- All pages are numbered, starting with the first page, and the author's last name appears before the page number.

This sample page also illustrates the form for in-text citations, block quotations, endnotes, and a list of works cited.

Sample MLA Research Paper


1"
½"
Double-space.
1"
1"
1"

Surname 1

Firstname Surname
Professor
English
15 November 1993

The Death Penalty: For Whom the Bell Tolls

Some legal issues gain importance because they concern basic religious, ethical, and social values. Capital punishment is such an issue. The solemnity and social importance of the death penalty are made vividly clear when a public official speaks of capital punishment in a jocular or cynical way. Orange County Superior Court Judge Robert R. Fitzgerald has sentenced six men to death; he calls them his "basketball team." "I keep waiting for one of them to score some points," he is quoted as saying (Hicks A36).

Most people who hold an opinion, pro or con, regarding the death penalty would find such an attitude repellent in the extreme. For our society, unlike some others, holds life to be of great value, even the supreme value.

Arguments favoring the death penalty hold that it (1) is moral, (2) deters potential murderers, (3) saves the state money, (4) fulfills the concept of justice, and (5) is more humane than life imprisonment.

Is the death penalty moral? Expert opinion is divided. For example, Ernest van den Haag, professor of jurisprudence and public policy at Fordham University, argues, "His crime morally sets the murderer apart from his victim. The victim did, and therefore the murderer does not, deserve to live.

Citation-(Hicks A36) indicates information from a newspaper article by Hicks beginning on page A36.

Opinion about Judge Fitzgerald is writer's own and does not come from a source.

Arguments for the death penalty come from the writer's own general knowledge. If drawn from a source, they would require a citation.

Author being quoted, Michael E. Endres, is identified in the lead-in to the quotation; thus his name is omitted from the parenthetical citation at the end. The full source is found under "Endres" in "Works Cited."

Quotation more than four lines long is indented ten spaces and appears without quotation marks. Citation comes after final punctuation, separated by one space.

Surname 2

His life cannot be sacred if that of his victim was" (61). However, Michael E. Endres, professor of criminal justice at Xavier University, says that capital punishment is immoral because

> the death penalty serves no rehabilitative purpose; it exceeds the requirements of justice and social unity; alternatives to it may serve the same purpose as well; finally, the incapacitation or special deterrence of a given offender is insured by execution, but there are other effective ways to inhibit reoffending. (67)

Source of information on age limits for juveniles is an anonymous newspaper article. Full information is under "Juveniles" in "Works Cited."

Both of the facts about the execution of minors comes from page 19 of Horgan.

If it is moral to execute convicted, responsible adults, is it also moral to execute children or adults who are mentally retarded or insane? Only in 1990 did Missouri raise its age limit for capital punishment from fourteen to sixteen ("Juveniles" 1). Is a sixteen-year-old a responsible adult? If not, should an offender this young be executed? Currently, more than seventy-five death-row inmates committed their crimes before they were eighteen years old, and in the last decade at least four such offenders have been executed (Horgan 19). The United States of America joins only four other nations in executing juvenile offenders: Bangladesh, Barbados, Iran, and Iraq (Horgan 19).

The two citations of Hood are for different kinds of information. The first is for a fact from Hood. The other is for Hood's opinion. Since both are from Hood, citations are required.

Diminished mental capacity is a mitigating factor in capital offenses, and psychiatric evidence must be considered in all cases (Hood 63-64). However, psychiatrists who assess the defendant's mental state from the standpoint of both

Surname 3

mitigation and potential for further violence are often in a double bind, for the very condition that mitigates the crime may, from another point of view, be the factor that makes the defendant a bad risk (Hood 64). Furthermore, psychiatry is more an art than a science and thus does not provide conclusive evidence for a decision regarding life or death.

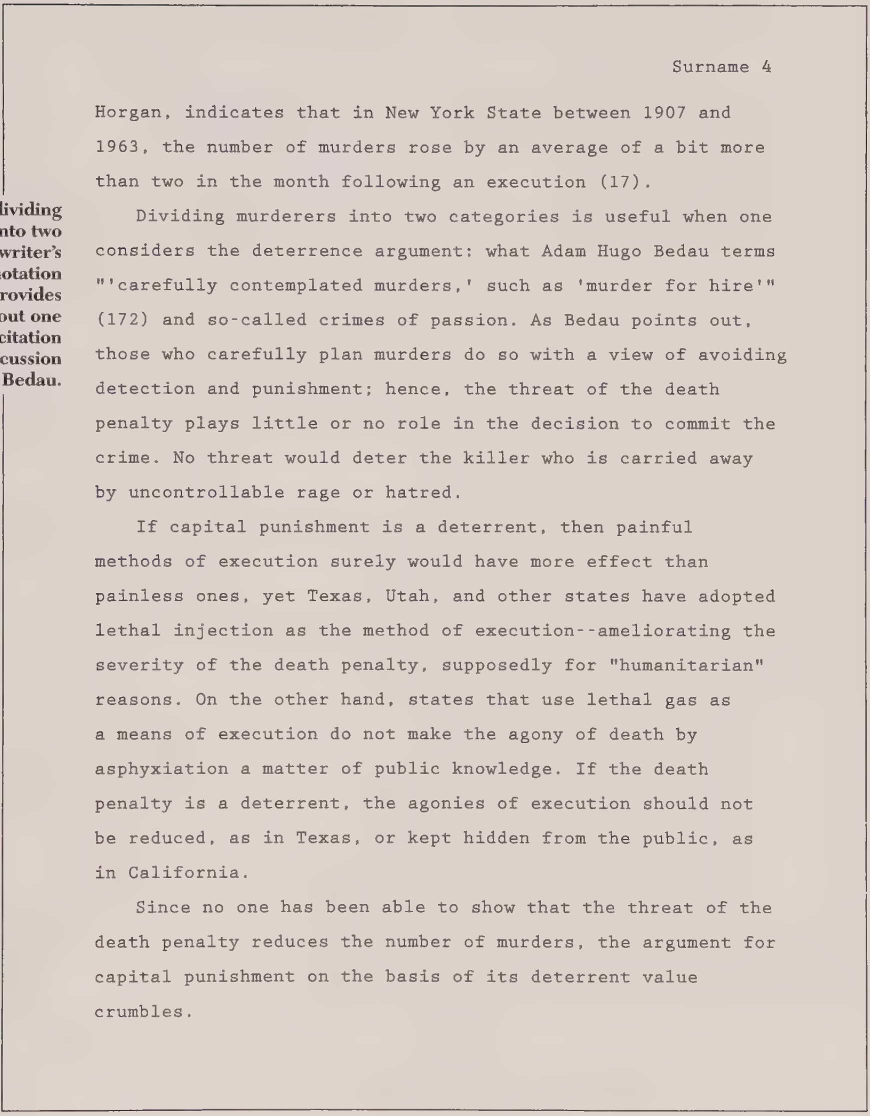
The moral questions regarding capital punishment are open to so much controversy that it would be difficult for an informed person to take a definitive stand one way or the other on moral grounds.

Does the death penalty deter potential murderers? Roger Hood is clear on this question: "The evidence as a whole gives no positive support to the deterrent hypothesis" (167). One might argue, of course, that the mere existence of the death penalty is not a deterrent unless executions are actually carried out. Thus, as the number of executions increases, the frequency of murder should decline. However, according to Hood (117-148), no evidence indicates that more frequent executions lead to lower homicide rates. For example, the last executions in Australia took place in the mid-1960s, but "the reported homicide rate per 100,000 of population has fallen, and the murder rate has remained constant" (Hood 124-25); in the United States, when the first execution took place after a decade-long moratorium, the homicide rate almost doubled, from 4.8 per 100,000 to 8.8 (Hood 126). Some admittedly inconclusive evidence suggests that executions may actually bring about more murders. One study, reported by

Paragraph 7 states the writer's own conclusion, not that of a source.

The exact quotation is from Hood, page 167. Since Hood's name is mentioned in the lead-in to the quotation, his name is not repeated in the parenthetical citation.

The citations indicate that the writer is summarizing pages 117–48 of Hood and using facts from pages 124–25 and 126 of Hood and page 17 of Horgan.



Surname 4

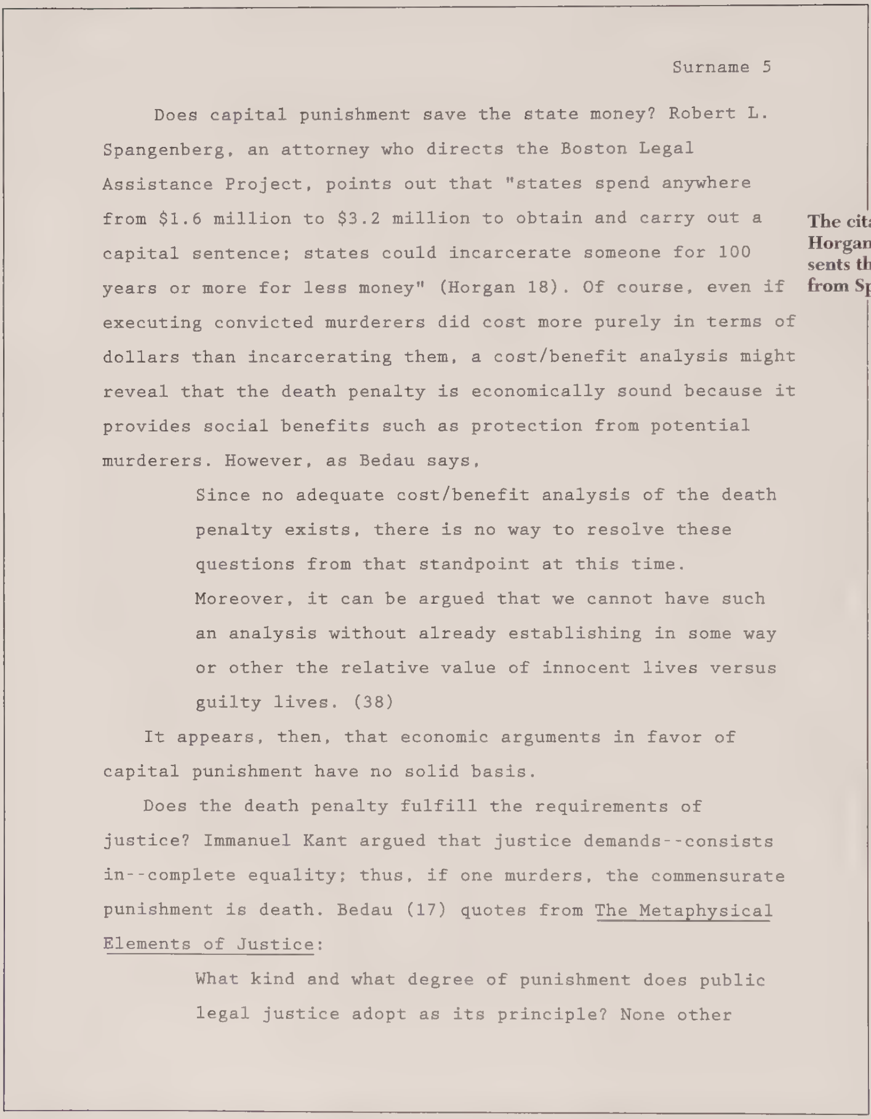
Horgan, indicates that in New York State between 1907 and 1963, the number of murders rose by an average of a bit more than two in the month following an execution (17).

Dividing murderers into two categories is useful when one considers the deterrence argument: what Adam Hugo Bedau terms "'carefully contemplated murders,' such as 'murder for hire'" (172) and so-called crimes of passion. As Bedau points out, those who carefully plan murders do so with a view of avoiding detection and punishment; hence, the threat of the death penalty plays little or no role in the decision to commit the crime. No threat would deter the killer who is carried away by uncontrollable rage or hatred.

If capital punishment is a deterrent, then painful methods of execution surely would have more effect than painless ones, yet Texas, Utah, and other states have adopted lethal injection as the method of execution--ameliorating the severity of the death penalty, supposedly for "humanitarian" reasons. On the other hand, states that use lethal gas as a means of execution do not make the agony of death by asphyxiation a matter of public knowledge. If the death penalty is a deterrent, the agonies of execution should not be reduced, as in Texas, or kept hidden from the public, as in California.

Since no one has been able to show that the threat of the death penalty reduces the number of murders, the argument for capital punishment on the basis of its deterrent value crumbles.

The idea of dividing murderers into two types is the writer's own, but the quotation from Bedau provides information about one type. The citation points to a discussion on page 172 of Bedau.



Surname 5

Does capital punishment save the state money? Robert L. Spangenberg, an attorney who directs the Boston Legal Assistance Project, points out that "states spend anywhere from $1.6 million to $3.2 million to obtain and carry out a capital sentence; states could incarcerate someone for 100 years or more for less money" (Horgan 18). Of course, even if executing convicted murderers did cost more purely in terms of dollars than incarcerating them, a cost/benefit analysis might reveal that the death penalty is economically sound because it provides social benefits such as protection from potential murderers. However, as Bedau says,

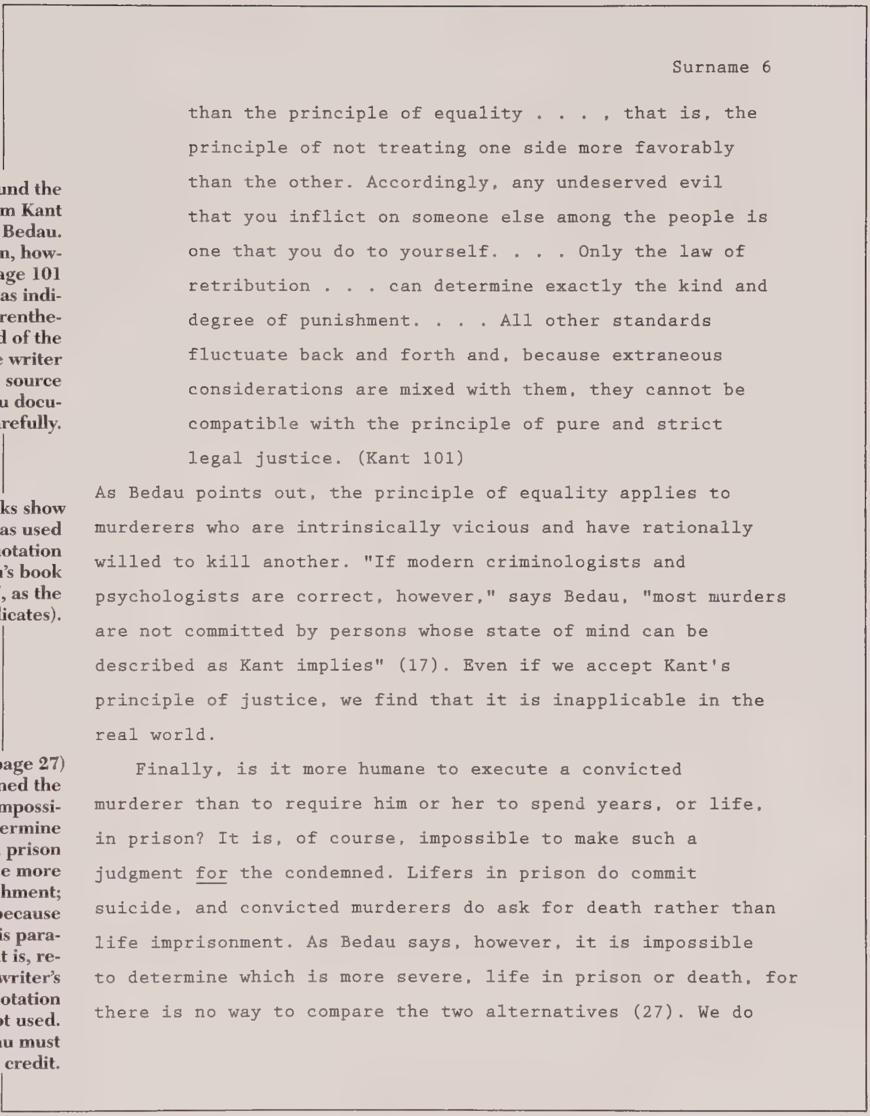
> Since no adequate cost/benefit analysis of the death penalty exists, there is no way to resolve these questions from that standpoint at this time. Moreover, it can be argued that we cannot have such an analysis without already establishing in some way or other the relative value of innocent lives versus guilty lives. (38)

It appears, then, that economic arguments in favor of capital punishment have no solid basis.

Does the death penalty fulfill the requirements of justice? Immanuel Kant argued that justice demands--consists in--complete equality; thus, if one murders, the commensurate punishment is death. Bedau (17) quotes from The Metaphysical Elements of Justice:

> What kind and what degree of punishment does public legal justice adopt as its principle? None other

The citation shows that Horgan (page 18) presents the information from Spangenberg.



Surname 6

> than the principle of equality . . . , that is, the principle of not treating one side more favorably than the other. Accordingly, any undeserved evil that you inflict on someone else among the people is one that you do to yourself. . . . Only the law of retribution . . . can determine exactly the kind and degree of punishment. . . . All other standards fluctuate back and forth and, because extraneous considerations are mixed with them, they cannot be compatible with the principle of pure and strict legal justice. (Kant 101)

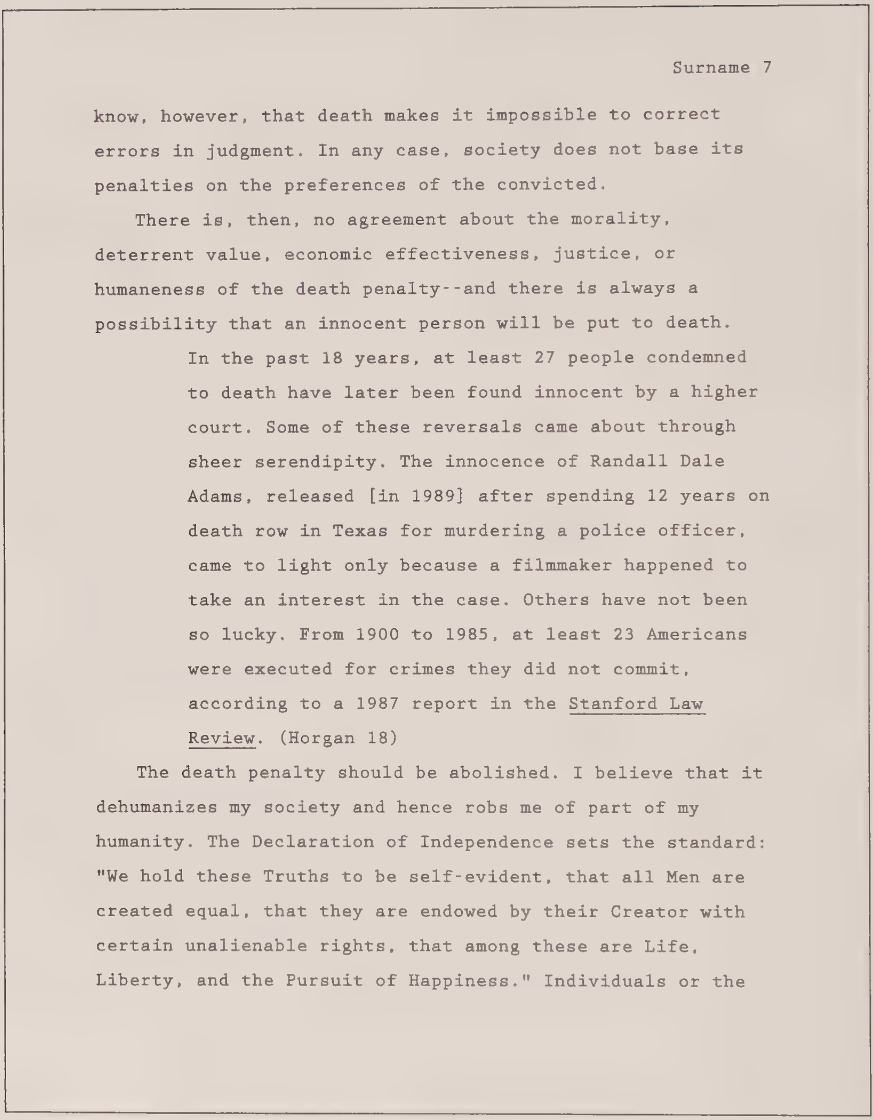
As Bedau points out, the principle of equality applies to murderers who are intrinsically vicious and have rationally willed to kill another. "If modern criminologists and psychologists are correct, however," says Bedau, "most murders are not committed by persons whose state of mind can be described as Kant implies" (17). Even if we accept Kant's principle of justice, we find that it is inapplicable in the real world.

Finally, is it more humane to execute a convicted murderer than to require him or her to spend years, or life, in prison? It is, of course, impossible to make such a judgment *for* the condemned. Lifers in prison do commit suicide, and convicted murderers do ask for death rather than life imprisonment. As Bedau says, however, it is impossible to determine which is more severe, life in prison or death, for there is no way to compare the two alternatives (27). We do

The writer found the quotation from Kant on page 17 of Bedau. The quotation, however, is from page 101 of Kant's book, as indicated in the parentheses at the end of the quotation. The writer knows Bedau's source because Bedau documented carefully.

Quotation marks show that the writer has used an exact quotation from Bedau's book (from page 17, as the citation indicates).

From Bedau (page 27) the writer gained the idea that it is impossible to determine whether life in prison or death is the more severe punishment; however, because Bedau's idea is paraphrased (that is, restated in the writer's own words), quotation marks are not used. However, Bedau must still be given credit.



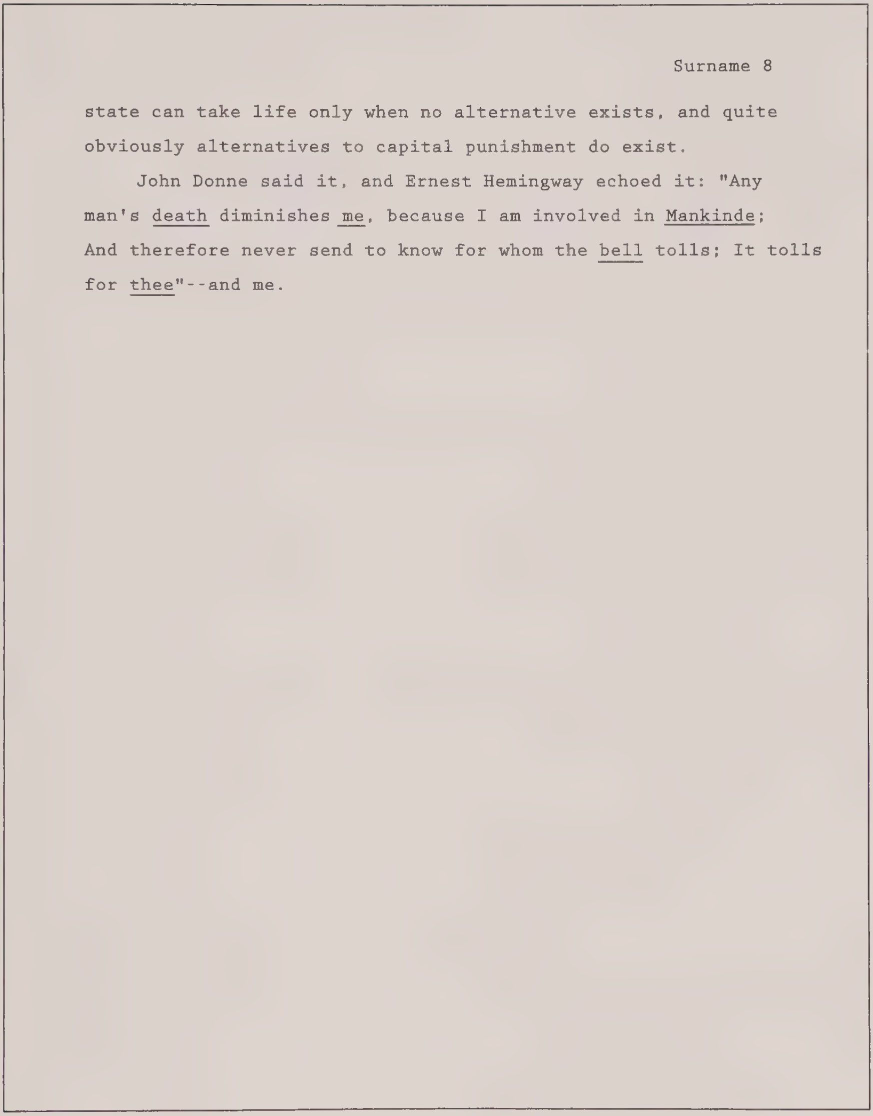
Surname 7

know, however, that death makes it impossible to correct errors in judgment. In any case, society does not base its penalties on the preferences of the convicted.

There is, then, no agreement about the morality, deterrent value, economic effectiveness, justice, or humaneness of the death penalty--and there is always a possibility that an innocent person will be put to death.

> In the past 18 years, at least 27 people condemned to death have later been found innocent by a higher court. Some of these reversals came about through sheer serendipity. The innocence of Randall Dale Adams, released [in 1989] after spending 12 years on death row in Texas for murdering a police officer, came to light only because a filmmaker happened to take an interest in the case. Others have not been so lucky. From 1900 to 1985, at least 23 Americans were executed for crimes they did not commit, according to a 1987 report in the Stanford Law Review. (Horgan 18)

The death penalty should be abolished. I believe that it dehumanizes my society and hence robs me of part of my humanity. The Declaration of Independence sets the standard: "We hold these Truths to be self-evident, that all Men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are Life, Liberty, and the Pursuit of Happiness." Individuals or the



Surname 8

state can take life only when no alternative exists, and quite obviously alternatives to capital punishment do exist.

John Donne said it, and Ernest Hemingway echoed it: "Any man's *death* diminishes *me*, because I am involved in *Mankinde*; And therefore never send to know for whom the *bell* tolls; It tolls for *thee*"--and me.

Surname 9

Works Cited

Bedau, Adam Hugo. Death Is Different: Studies in the Morality, Law, and Politics of Capital Punishment. Boston: Northeastern UP, 1987.

Donne, John. "Meditation 17." College Survey of English Literature. Ed. Alexander M. Witherspoon et al. Shorter ed., rev. New York: Harcourt, 1951. 340-41.

Endres, Michael E. "The Morality of Capital Punishment." Rpt. in The Death Penalty: Opposing Viewpoints. Ed. Bonnie Szumski, Lynn Hall, and Susan Bursell. St. Paul: Greenhaven Press, 1986. 62-67.

Hicks, Jerry. "O. C. Judge Decries Delay in Executing the 'Deserving.'" Los Angeles Times 9 June 1991,Orange County ed.: A1+. News Source USA. Online. CompuServe. 24 Oct. 1993.

Hood, Roger. The Death Penalty: A World-Wide Perspective; A Report to the United Nations Committee on Crime Prevention and Control. Oxford: Oxford UP, 1989.

Horgan, John. "The Death Penalty." Scientific American July 1990: 17-19.

"Juveniles." Lifelines [National Coalition to Abolish the Death Penalty] April/May/June 1991: 1.

Kant, Immanuel. The Metaphysical Elements of Justice. 1797. Trans. John Ladd. Indianapolis: Bobbs, 1965.

van den Haag, Ernest. The Death Penalty: A Debate. New York: Plenum, 1983. Excerpt rpt. in The Death Penalty: Opposing Viewpoints. Ed. Bonnie Szumski, Lynn Hall, and Susan Bursell. St. Paul: Greenhaven Press, 1986. 58-61.

APA Style

The *Publication Manual of the American Psychological Association*, 4th ed. (1994), recommends a system of brief in-text citations that refer to a list of references (with full publication information) at the end of the paper.

Some of the formatting instructions that follow reflect APA's preferences for manuscripts submitted for publication rather than for the final versions printed in its journals. Before formatting your final draft, find out if your instructor has different preferences from the basic APA guidelines that follow. These differences might include the indentation style of the reference list and whether italics can be used instead of underlining.

APA In-Text Citations

Parenthetical in-text citations should not distract the reader, but they must be complete enough to allow the reader to easily locate the corresponding entry in the reference list. If a specific passage is being quoted or referred to, include the page number (or numbers) in the citation; if the whole work is being referred to, page numbers are not necessary. The following examples illustrate the APA style of in-text citation.

1. *Author named in text.* Include the year and the page number (or numbers) of the citation (preceded by "p." or "pp."). Separate the elements with a comma. If a work is cited more than once in a paragraph, only the first mention needs to include the year.

> According to Inose and Pierce (1984, p. 157), the term artificial intelligence may be a misnomer.

If the reference list contains two authors with the same last name, include the first initials of each one in the in-text citations.

2. *Author not named in text.* Separate the author's name, date of publication, and page numbers with commas.

> The scarcity of day care is an obstacle to employment for many women with young children (Sidel, 1986, p. 344).

3. *More than one author.* For a work with two authors, cite both names every time. When the names are in parentheses, use an ampersand (&) instead of writing out *and.*

> Edward A. Feigenbaum, an artificial intelligence researcher, has produced a program that "analyzes mass spectra and

> produces highly probable molecular structures" (Inose & Pierce, 1984, p. 142).

For a work with three to five authors, cite all the names the first time a reference to the work appears; in subsequent references, give only the first author's name followed by "et al." (Latin abbreviation for "and others").

> The inherited aspects of intelligence cannot be considered separately from environmental influences (Conley, Bennett, Alling, Sherwin, & Reid, 1992).

For a work with six or more authors, give only the first author's name followed by "et al." in the first as well as all subsequent citations.

> E. Jones et al. (1985) summarize a 37-nation study of adolescent pregnancy.

4. *Author of two or more works in one year.* If an author has two books or articles published in the same year, the reference list should show the date of the first followed by an "a" and the date of the second followed by a "b." The order is determined by the alphabetical order of the titles. The in-text citations should also show "a" and "b."

> More women--224,000 of them--serve in the United States armed forces than in any other military forces in the world (Moore, 1989a).

5. *Group author or government agency.* If the name of the agency or institution is long, write it out in full for the first reference and abbreviate it (if the abbreviation is familiar) in second and subsequent citations.

> Over ten thousand respondents to a survey of Pacific Telephone customers (Field Research Corporation, 1985, p. 42) estimated that 74 percent of their calls were "personal or social."

6. *Unknown author.* If the source is not signed (a brief article in a newspaper or magazine, for example), use the first few words of the title in the citation. Enclose the title of an article or a chapter in quotation marks; underline the title of a periodical, book, brochure, or report. (The full title for the article cited in the example is "Can Your Mind Heal Your Body?")

> Both physicians and entrepreneurs have recently become interested in how the mind can affect physical health ("Can Your Mind Heal?" 1993, p. 107).

7. *Indirect source.* To cite material that appears as a quotation in your source, identify the original source and then precede the name of your source with the phrase "as cited in." The reference list should include only your source.

> Kenneth Bruffee observed, "While students often forget much of the subject matter shortly after class is over, they do not easily forget the values implicit in the conventions by which it was taught" (as cited in Trimbur, 1992, p. 95).

8. *More than one source.* If a statement has more than one source by the same author (or authors), list the years of publication after the author's name.

> This conclusion is repeated in the more recent issues of her work (Vanderbilt, 1967, 1972).

If a statement has more than one source by different authors, list the sources in alphabetical order and separate them with a semicolon.

> Most advanced industrial countries in the West--except the United States--have a universal program of national health insurance or a national health service (Leichter, 1979; Roemer, 1977; Simanis & Coleman, 1980).

9. *Personal communications.* Letters, e-mail, telephone conversations, and other personal communications that are not publicly available are cited in the text but not included in the reference list. Give the initials and the last name of the person who made the communication, and follow it with the phrase "personal communication" and the date.

> The study was originally commissioned by the State of North Carolina (T. R. Purefoy, personal communication, November 11, 1991).

APA Reference List

Beginning on a separate page at the end of your paper, list in alphabetical order all the references you cite and give full publishing information for them. Title the list *References* and center this heading an inch from the top of the page. Double-space both within and between entries, and indent the first line five to seven spaces. Note, however, that some instructors may prefer a hanging indentation (that is, the first line flush with the left margin, and the second and subsequent lines indented), which is the style used in printed APA publications.

Alphabetize the reference list according to the last name of the authors or the first important word in the title of works without a listed author. Entries for an author writing alone precede entries in which that author has coauthors. Arrange works by the same author (or authors) according to the publication date, starting with the earliest. If two or more works by the same author were published in the same year, arrange them alphabetically by the first main word in the title and add "a" after the year of the first one, "b" after the year of the second one, and so on. Use both the year and the letter in the in-text citation.

BOOKS

Book entries have four parts, and each one ends with a period. The first part is the author's name—with the last name first and a comma separating it from the initial of the first name. The second part is the year of publication, which is enclosed in parentheses. The third part is the title and the subtitle, which are italicized or underlined (underlining is preferred for manuscripts submitted to APA for publication); only proper nouns and the first letter of the title and subtitle are capitalized. The fourth part of a book entry is the place of publication and the name of the publisher (in as brief a form as is intelligible).

Brochures and pamphlets use the same format, with a descriptive label, such as "Brochure," added in brackets after the title.

1. *Book with one author.* Give the author's first initial, not the full first name, after the last name.

> Bromwich, D. (1992). Politics by other means: Higher education and group thinking. New Haven: Yale University Press.

2. *Book with two or more authors.* The names of all the authors are inverted (last name first) and separated by commas. Even though "et al." may be used in in-text citations after the first name when there are three or more authors, all the authors should be named in the reference list. Use an ampersand (&) instead of the word *and* before the name of the last author.

> Barr, R., & Dreeban, R. (1983). How schools work. Chicago: University of Chicago Press.

3. *Book with group author.* Alphabetize group-author entries by the first main word in the name (omit the articles *a*, *an*, and *the*). If the group

author is also the publisher, use the word "Author" (not italicized or underlined) as the name of the publisher.

United Nations Children's Fund. (1990). The state of the world's children 1990. New York: Oxford University Press.

4. *Book with editor or editors.* Begin the entry with the name of the editor (or editors). Enter the abbreviation "Ed." for "Editor" (or "Eds." for "Editors"), enclosed in parentheses, following the name of the last editor. For a book with an author and an editor, give the author's name as the first element, and put the editor's name in parentheses after the title, as a translator's name is treated.

Zigler, E., & Valentine, J. (Eds.). (1979). Project Head Start: A legacy of the war on poverty. New York: Free Press.

5. *Translated work.* In parentheses after the title of the work, insert the name of the translator (or translators) followed by a comma and the abbreviation "Trans." (for "Translator" or "Translators").

Durkheim, E. (1938). The rules of the sociological method (8th ed.) (S. Solovay and J. Mueller, Trans.). New York: Free Press.

6. *Book without listed author.* Alphabetize the entry by the first significant word in the title (omit the articles *a, an,* and *the*).

American Heritage Larousse Spanish dictionary (1986). Boston: Houghton Mifflin.

7. *Book edition.* The information about the edition immediately follows the title (which is not followed by a period); it is abbreviated ("Rev. ed." for "revised edition," "2nd ed." for "second edition," and so on), enclosed in parentheses, and followed by a period.

Goodall J. (1988). In the shadow of man (Rev. ed.). Boston: Houghton Mifflin.

8. *Selection in an edited book.* Begin with the name of the author of the selection, followed by the title of the selection (do not italicize or underline the title or enclose it in quotation marks). The third part of the entry identifies the edited volume: After the word "In," give the editor's name in normal order, followed by "Ed." in parentheses. After a comma, give the book

title (italicized or underlined) and, enclosed in parentheses, the volume number (if any) and the page numbers of the selection.

> Freud, S. (1959). Analysis of a phobia in a five-year-old boy. In A. Strachey & J. Strachey (Eds. and Trans.), Sigmund Freud: Collected papers (Vol. 3, pp. 78-94). London: Hogarth Press. (Original work published 1909)

This entry also shows the format for a republished work. Its date goes after the author's name; the original date of publication is indicated at the end of the entry in parentheses after the phrase "Original work published." The in-text citation should read "(Freud, 1909/1959)."

9. *Multivolume series.* After the title, enclose in parentheses the number of the volume (or volumes) consulted. (See example 8.) If all the volumes in the set were consulted, use inclusive numbers (such as "Vols. 1–4"). If the volume has a separate title and editor, show them by using the following format.

> Mussen, H. P. (Series Ed.), & Hetherington, E. M. (Vol. Ed.). (1983). Handbook of child psychology: Vol. 4. Socialization, personality, and social development (4th ed.). New York: Wiley.

PERIODICALS

Entries for articles from periodicals have four parts, and each one ends with a period. The first part is the author's name, with last name first and a comma separating it from the first initial. The second part is the date of publication, which is enclosed in parentheses. The third part is the title of the article, which is not underlined or enclosed in quotation marks; only proper nouns and the first word of the title and subtitle are capitalized. The fourth part is the title of the periodical, which is underlined with all the significant works capitalized. The title is followed by numbers identifying volume, issue, and pages.

10. *Article in a magazine.* Give the month of publication (and the day, if the magazine is published weekly) as well as the year. Note that the month is not abbreviated. After the title, include the volume number, underlined, and then the page numbers. Give all page numbers, including discontinuous pages.

> Siebert, C. (1993, February). The artifice of the natural: How TV's nature shows make all the world a stage. Harper's, 131, 43-45, 51.

11. *Article in a daily newspaper.* Give the date of the issue along with the year of publication. List the section and page number (or numbers) at the end of the entry, using the abbreviation "p." (or "pp.").

Luoma, J. R. (1992, March 16). List of endangered species said to come too late to help. The New York Times, p. C4.

12. *Article in a journal paginated by annual volume.* Follow the title with a comma and then give the volume number (both the title and the volume number are italicized or underlined). After another comma, give the page numbers. Do not use the abbreviation "p." in reference entries for journals.

Balint, A. (1949). Love for the mother and mother-love. International Journal of Psychoanalysis, 30, 251-259.

13. *Article in a journal paginated by issue.* Follow the title with a comma and then give the volume number (italicized or underlined) and the issue number (in parentheses). After another comma, give the page numbers. Do not use the abbreviation "p." in reference entries for journals.

Geen, R. G., & Thomas, S. L. (1986). The immediate effects of media violence on behavior. Journal of Social Issues, 42(3), 7-27.

14. *Unsigned article.* Use the form for the appropriate kind of periodical, but begin with the article title and alphabetize the entry according to the first main word in the title. Use a shortened version of the title (such as "Hooked") in the in-text citation.

Hooked on tobacco: The teen epidemic. (1995, March). Consumer Reports, 60, 142-147.

15. *Interview, published.* Begin with the interviewer's name, and use the form for the appropriate kind of periodical. After the interview title (if any), insert a bracketed description that includes the interviewee's name.

Norman, H. (1991). A conversation with Philip Levine [Interview with Philip Levine]. Ploughshares, 10(4), 11-22.

16. *Review.* If the review has a title, insert it in front of the bracketed description (as in example 15). Identify the medium (such as book, film, television program) in brackets along with the title of the work being reviewed.

Meeks, H. A. (1992). [Review of the book The land that feeds us]. Geographical Review, 82(3), 331.

17. *Letter to the editor.* If the letter has a title, insert it before the bracketed phrase "Letter to the editor" (see example 15).

Rapier, F. Link (1993, April). [Letter to the editor]. Premiere, 30, p. 20.

ELECTRONIC SOURCES

If material is available in both print and electronic forms, the APA prefers references to the print form. For documents available only in electronic form, provide enough information so that the exact version of the document you consulted can be retrieved.

18. *Online sources.* Provide the author, date, and title information as you would for a print source. After the title, add "[On-line]." For a source that is regularly revised, give the most recent update or, if that cannot be determined, the date of your search. In the place of the publication information that would be provided for a book, include an availability statement with enough information (such as protocol, directory, and file name) to retrieve the material. To indicate the length of an unpaginated online source, use the number of paragraphs, and in in-text citations indicate the location of particular passages by using paragraph numbers.

Fitch, R. H., & Denenberg, V. H. (1994, March). A role for ovarian hormones in sexual differentiation of the brain [56 paragraphs]. Psycoloquy [On-line serial], 6(05). Available FTP: Hostname: princeton.edu Directory: pub/harnad/Psycoloquy/1995.volume.6 File: psycoloquy 95.6.05 sex.brain.1.fitch

19. *CD-ROMs and other portable databases.* Provide the author, date, and title information as you would for a print source. In brackets after the title, identify the medium (such as CD-ROM, electronic data tape, or cartridge tape). At the end of the entry, include the location and name of the producer and distributor of the item number in a data file.

Steinhausen, H. C., & Vollrath, M. (1993). The self-image of adolescent patients with eating disorders. [CD-ROM]. International Journal of Eating Disorders, 13(2), 221-227. Abstract from: SilverPlatter File: PsycLIT Item: 80-33985

OTHER SOURCES

20. *Government document.* If an author is not listed, begin with the name of the agency. If there is a report number, include it in parentheses immediately after the title (with no punctuation intervening). If the agency is both author and publisher, use the word "Author" (not italicized or underlined) in place of the publisher's name.

U.S. Department of State. (1961). *Foreign relations of the United States: Diplomatic papers--the conferences at Cairo and Tehran 1943.* Washington, DC: U.S. Government Printing Office.

21. *Film or other nonprint source.* Give the name of the originators and, in parentheses, their function. Identify the medium (which could also be videotape, audiotape, slides, charts, or art work) in brackets immediately after the name of the work. At the end of the entry, give the location and name of the distributor or the site of the work of art.

National Geographic Society (Producer). (1986). *Gorilla* [Videotape]. Washington, DC: National Geographic Society.

Delaunay, S. (Artist). (1958). *Colored rhythm no. 698* [Painting]. Buffalo: Allbright-Knox Art Gallery.

22. *Television program.* For a single episode in a series, use the basic form of a selection in an edited book (see example 8), with the scriptwriter in the author position and the series producer in the editor position. If the show has a director, include the name in parentheses after its title.

Levy, P. R. (1994). The mission. In P. L. Stein (Producer), *Neighborhoods: The hidden cities of San Francisco.* San Francisco: KQED.

To cite a series, use the basic form for a book (see example 1), with the series producer in the author position and "Producer" in parentheses after the name. Use the same form to cite a particular broadcast of a regularly scheduled news program, but add the date of the broadcast after the year.

23. *Legal source.* An entry for a court decision includes the name of the case (plaintiff v. defendant); the volume, name, and page number of the

law report; and the court jurisdiction (if it was the Supreme Court, no name is necessary) and the date of the decision in parentheses.

`Brown v. Board of Educ., 347 U.S. 483 (1954).`

In in-text citations, the names of cases are underlined: `Brown v. Board of Education (1954).`

An entry for a law or statute includes the name of the act; the volume and page or section number of the source; and the year in parentheses.

```
        Atomic Energy Act of 1946, Pub. L. No. 585, 60 Stat.
    767 (1947).
```

In in-text citations, the names of laws or statutes are not underlined: `Atomic Energy Act (1946).`

If your paper has many legal citations, consult the *Publication Manual of the American Psychological Association*, 4th ed., or *The Bluebook: A Uniform System of Citation,* 15th ed. (Harvard Law Review Assn., 1991).

APA Manuscript Form

APA style covers aspects of the appearance of the finished manuscript. (See the sample pages illustrated on page 497.) Students who are preparing laboratory reports and technical papers may want to consult the APA manual for additional information about preparation of tables and figures and treatment of statistical and mathematical copy.

Margins Leave at least one inch at the top, the bottom, and the sides.

Title Page and Headings. Center the title on the page. Follow APA's conventions of capitalization for titles: Capitalize all major words (including those following the hyphen in **compound words**) and all words of four letters or more; capitalize **conjunctions, articles,** or **prepositions** only if they have four or more letters; capitalize the first word after a colon or a dash.

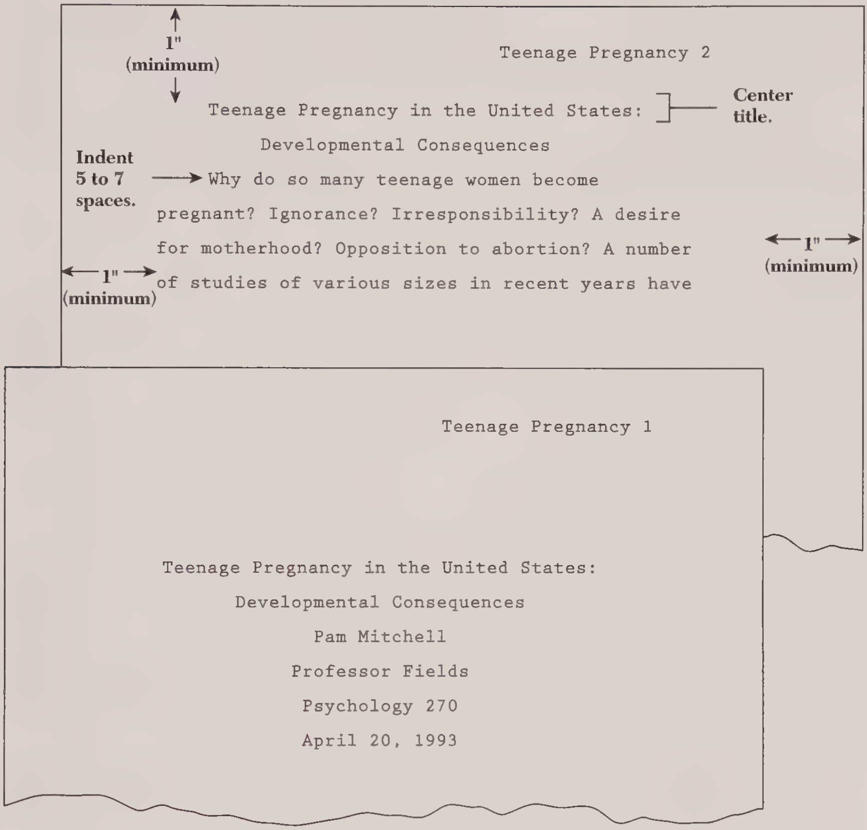
Double-space and center the author's name, the instructor's name, the course name and number, and the date on separate lines underneath the title.

If there is an abstract, put it on the page following the title page, with the heading "Abstract" centered at least an inch from the top of the page.

On the first page of text, type the title again, centered at least an inch from the top of the page. Double-space and then start the first line of the text.

Page Numbers Beginning with the title page, number all pages consecutively in the upper right-hand corner, about half an inch from the top of the

Sample APA Manuscript Pages



Teenage Pregnancy 2

Teenage Pregnancy in the United States:

Developmental Consequences

Why do so many teenage women become pregnant? Ignorance? Irresponsibility? A desire for motherhood? Opposition to abortion? A number of studies of various sizes in recent years have

Teenage Pregnancy 1

Teenage Pregnancy in the United States:

Developmental Consequences

Pam Mitchell

Professor Fields

Psychology 270

April 20, 1993

page and at least an inch from the right-hand edge of the page. Type the short title (the first two or three words of the title) five spaces to the left of the page number in case the pages get separated.

Corrections and Insertions Do not strike out errors or ink in corrections. If you are using a word processor, make the corrections and print out fresh pages. If you are using a typewriter, use correction fluid or a ribbon with correctable tape. (Your corrections are more likely to line up if you proofread and correct before you take the page out of the typewriter.) Do not put corrections in the margins or write on the manuscript. Retype any page that has more than two corrections.

Block Quotations A quotation longer than forty words should be set off from the rest of the text. Indent it five to seven spaces from the left margin and double-space it. Do not indent the first line of the quotation more than the other lines. If the quotation is two or more paragraphs long, indent the first line of the second and subsequent paragraphs an additional five to seven spaces.

An in-text citation (usually the page number, which is proceeded by p.) is added one space after the final punctuation mark of the quotation.

> Breuer and Freud (1895) noted that sometimes the connection between a hysterical symptom and its precipitating event is quite clear. For example:
>
> > A highly intelligent man was present while his brother had an ankylosing hip-joint extended under an anesthetic. At the instant at which the hip joint gave way with a crack, he felt a violent pain in his own hip-joint, which persisted for nearly a year. (p. 15)

CMS Style

The Chicago Manual of Style (14th ed., University of Chicago Press, 1993) presents two styles of documentation. One uses author-date citations in the text paired with a reference list, much like the MLA and APA styles. The other—the one that is explained here—uses numbered endnotes or footnotes and, with long manuscripts, a bibliography. This style is often used in history, art history, and other humanities disciplines.

The Chicago Manual of Style (CMS) was originally written as a guide to authors and editors of book-length manuscripts. It has been adapted for students as *A Manual for Writers of Term Papers, Theses, and Dissertations* (6th ed., University of Chicago Press, 1996) by Kate Turabian. Occasionally, the recommendations in these two books differ. For example, *The Chicago Manual* prefers endnotes to footnotes because they are less expensive to typeset; however, Turabian's manual recommends footnotes for dissertations, theses, and any other paper that will be stored on microfilm. For a typical research paper written as a class assignment, endnotes are generally preferable. In the pages that follow, we will note other differences between *The Chicago Manual* and Turabian's manual; find out whether your instructor prefers one form over the other.

CMS Documentary Notes

Whether you use footnotes at the bottom of the text pages or endnotes on a separate page at the end of the paper, you should number them consecutively throughout the paper. As one of the last steps before you finish your paper, check the note numbers to make sure that none have been accidentally omitted.

For the note numbers in the text, use arabic numerals typed slightly above the line. Most word processors and many typewriters can raise characters by half a line, and most word processors can reduce the type size (from 12 to 9 or 10 points, for example) to produce a superscript number (^{1}). Note numbers should be placed at the end of a sentence or a clause, after the punctuation mark (with the exception of a dash, which should be preceded by the note number).

The numbers preceding the notes themselves are preferably typed on the same line as the note (and in the same type size) and followed by a period and a space. If you are using a computer program that generates footnotes with superscript numbers, however, most instructors will accept that style.

According to *The Chicago Manual*, footnotes in manuscripts to be submitted for publication must be double-spaced, but in academic papers not intended for publication, single-spacing with a blank line between notes is acceptable; Turabian recommends single-spacing both footnotes and endnotes, with a blank line between notes. The first line of each note should be indented by the same amount that paragraphs are indented. Either italics or underlining can be used to indicate the titles of books and other works.

Footnotes appear on the bottom of the same page of text where the corresponding note numbers appear. A short rule (about twenty characters long) separates the text and the footnotes. If the last footnote on a page runs over to the following page, the continuation is also separated from the text with a short rule.

BOOKS

1. *Book with one author.* The author's name is not inverted. The name of the book is underlined or italicized, and the important words are capitalized. Publication information—place of publication, name of publisher, and date of publication—is enclosed in parentheses. The page number (or numbers) of the information being cited follows the publication information; page numbers are not necessary if the entire work is being cited. For inclusive page numbers, you need to include only the digits that have changed in the second number; for example, 321–5 (instead of 321–325) or 547–55 (instead of 547–555).

1. Julie Roy Jeffrey, Frontier Women: The Trans-Mississippi West 1840-1860 (New York: Hill and Wang, 1979).

2. *Book with two or three authors.*

2. Dennis Tedlock and Barbara Tedlock, Teaching from the American Earth: Indian Religion and Philosophy (New York: Liveright, 1975), 75.

3. *Book with more than three authors.* In a note, the name of the first author can be followed by "et al." or "and others." The bibliography entry, however, customarily lists all the authors (with the name of only the first author inverted).

3. Travis Hudson et al., The Eye of the Flute: Chumash Traditional History and Ritual as Told by Fernando Librado Kitsepawit (Santa Barbara, Calif.: Santa Barbara Museum of Natural History, 1977), 20.

4. *Book with a group or corporate author.* If a work published by an organization has no author's name on the title page, show the organization as the author in the reference note.

4. University of Chicago Press, The Chicago Manual of Style, 14th ed. (Chicago: University of Chicago Press, 1993).

5. *Book with an editor.* Begin the entry with the name of the editor (or editors), followed by the abbreviation "ed." (or "eds.").

5. H. Shelton Smith, Robert T. Handy, and Lefferts A. Loetscher, eds., American Christianity (New York: Scribner's, 1960), 146.

6. *Book with an editor or translator and an author.* Unless the translator or editor is the point of the reference, the author's name comes before the title, and the translator's and/or editor's name comes after. Use the abbreviation "trans." for "translator." (Note that the two-part publication information in this entry indicates that the source is a reprint of a relatively recently published book; data for both the original and the reprint are given. Example 7 shows the treatment for a reprint of an older, classic work.)

6. Carlos Fuentes, Burnt Water, trans. Margaret Sayers Peden (New York: Farrar, Straus and Giroux, 1980; reprint, New York: Noonday Press, 1986).

7. *Foreword or introduction.* This kind of note is used only when the foreword or introduction itself is the source of information. The name of the book's author follows the title of the book. (Note that the publication infor-

mation here shows the original date of publication as well as the date this classic work was reprinted.)

7. Tony Tanner, introduction to Pride and Prejudice, by Jane Austen (1813; reprint, edited by Tony Tanner, New York: Penguin, 1980), x-xii.

8. *Book without a listed author or editor.* If no author is shown for a book, begin the note with the name of the book.

8. Dorothea Lange, with an essay by Christopher Cox, vol. 5 of Aperture Masters of Photography (New York: Aperture, 1987).

9. *Book edition other than the first.*

9. Lacy Baldwin Smith, This Realm of England, 5th ed. (Lexington, Mass.: D. C. Heath, 1988), 177-78.

10. *Selection in an edited book.* The name of the selection or chapter is enclosed in quotation marks. The name of the book is underlined or italicized. The name of the editor (or editors) is preceded by "ed." (an abbreviation for "edited by").

1. John Garrard, "Parties, Members and Voters After 1867," in Later Victorian Britain, ed. T. R. Gourvish and Alan O’Day (New York: St. Martin’s Press, 1988), 145.

11. *Letter in a published collection.*

2. Victoria to Vicky, 28 January 1863, Queen Victoria in Her Letters and Journals, ed. Christopher Hibbert (New York: Viking Penguin, 1985), 170.

12. *Volume in a multivolume series.* The volume title may either precede or follow the series title. If the volume does not have a separate title, include the volume number after the title of the series; if the note refers to specific pages, however, give the volume number with the page numbers at the end of the citation.

3. Paul L. Hughes and James F. Larkin, eds., Tudor Royal Proclamations, vol. 1 of The Early Tudors (1485-1553) (New Haven: Yale University Press, 1964), 80.

4. C. Peter Ripley, ed., The Black Abolitionists’ Papers, vol. 1 (Chapel Hill: University of North Carolina Press, 1985).

or

4. C. Peter Ripley, ed., The Black Abolitionists' Papers (Chapel Hill: University of North Carolina Press, 1985), 1: 111.

13. *Reference book.* It is not necessary to provide the facts of publication in notes for well-known reference books. If the encyclopedia or dictionary is organized in alphabetical order, a page number is not necessary. Instead, use the abbreviation "s.v." (for *sub verbo*, "under the word") and cite the name of the entry where the information can be found. Citations for information from reference books are generally not included in the bibliography.

5. Dictionary of American Negro Biography, s.v. "Roudanez, Louis Charles."

PERIODICALS

14. *Article in a journal.* The article title is enclosed in quotation marks. The journal title is underlined or italicized. The volume number follows the name of the journal. If there is an issue number, it may be included after the volume number either in parentheses (in which case, the date follows the page number) or preceded by "no." (the abbreviation for "number"). Issue numbers must be included for journals paginated by issue rather than volume or year. The date of publication is enclosed in parentheses and followed by a colon and the page number (or numbers) of the information being cited.

1. Alice Dunbar-Nelson, "People of Color in Louisiana," Journal of Negro History 2 (1917): 78.

2. Gary Snyder, "Cold Mountain Poems," Evergreen Review 2, no. 6 (autumn 1958): 69-80.

or

2. Gary Snyder, "Cold Mountain Poems," Evergreen Review 2 (6): 69-80 (autumn 1958).

15. *Article in a magazine.* A reference to an article in a general-interest magazine does not need to include the volume number; if it does not, the date of the issue is not enclosed in parentheses, and the page number is separated from the date by a comma rather than a colon. Whichever style you choose to use in your paper, use it consistently.

3. Warren Rogers, "The Persecution of Clay Shaw," Look, 26 August 1969, 60.

or

3. Warren Rogers, "The Persecution of Clay Shaw," Look 33 (26 August 1969): 60.

16. *Article in a daily newspaper.* If the section of the paper is identified, include its name, number, or letter. When the entry includes section number, page number, and column number, use the abbreviations "sec.," "p.," and "col." to avoid confusion (see example 19). If the city is not named in the title of the newspaper, add it to the title in parentheses (see example 17).

4. Clifford Krauss, "Twenty-Eight Years after Assassination, Conspiracy Theories Refuse to Die," New York Times, 5 January 1992, 18(N).

17. *Unsigned article in a periodical.* Start with the article title if no author is named.

5. "Garrison Predicts Success for Probe," (New Orleans) Times Picayune, 19 February 1967, 2.

18. *Interview, published or broadcast.*

6. Huston Smith, interview by Bill Moyers, The Wisdom of Faith: A Personal Philosophy, Part 5, Public Broadcasting System, 28 April 1996.

19. *Review.* Start with the name of the reviewer and the title of the review (if any). After the words "review of," identify the work reviewed by name and author (or other relevant information, such as director, performers, producer, type of production, location and date of a live performance). Finally, give the name, date, and page number(s) of the periodical where the review appeared.

7. John J. O'Connor, "An England Where Heart and Purse Are Romantically United," review of Jane Austen's Pride and Prejudice (BBC /A&E television production), New York Times, 13 January 1996, 13(L).

8. Bosley Crowther, review of Pride and Prejudice, dir. Robert Z. Leonard (MGM movie), New York Times, 9 August 1940, p. 19, col. 1.

OTHER SOURCES

20. *Online source.* Because electronic sources are developing so quickly, the style for citing them is still developing too. The basic principle, however, is to provide the author/title/date information that would be provided for a print source and to provide enough "publication" information to retrieve the document. In addition, you should include the date you accessed the information (indicated in Chicago style by the term "cited") because online documents are often modified or updated.

> `9. Eric Johnson, "How Jane Austen's Characters Talk" (version 2.0 of TEXT Technology: The Journal of Computer Text Processing 4 [Winter 1994]: 263-67), in Jane Austen Information Page [home page; cited 21 May 1996]; available from http://www.dsu.edu/~johnsone/austench.html; INTERNET.`

21. *Film, videorecording, or other visual material.* Because there are so many kinds of visual materials (not only movies on cassette, but also films and slides), one rule cannot cover them all. The citation note should provide whatever information is necessary to describe the source, to indicate its relevance to the researcher, and to retrieve it.

> `1. Pride and Prejudice, directed by Robert Z. Leonard, produced by Hunt Stromberg, starring Greer Garson and Laurence Olivier, MGM/UA, 1940, videocassette.`

22. *Sound recording.* The entry for a record, tape, or compact disc (spelled disk by CMS) usually begins with the name of the composer. Collections or anonymous works begin with the title. Underline or italicize the title of a recording; enclose the name of a selection in quotation marks. The name of the performer usually follows the title; if the purpose of the citation is to emphasize the performer, however, the entry may begin with the performer's name. For publication information, use the name of the recording company, and the number of the recording. Other information—such as copyright date and kind of recording—may be added.

> `2. Joaquin Rodrigo, "Concierto de Aranjuez," on Rodrigo: Conciertos, Pepe Romero and Academy of St. Martin in the Fields, Sir Neville Marriner, Philips compact disk 432 828-2.`

23. *Public document.* Citations for printed public documents should generally include the country, state, or other government division issuing the document (unless all the documents being cited are issued by the same

government); the legislative body, executive department, court, or agency (including the name of any subsidiary division); the title of the document (underlined or italicized); the name of the author or editor, if given; the report number or other identification necessary to locate the document; the publisher if different from the issuing body; the date; and the page number, unless the entire work is being cited. If you are citing a large number of public documents, you may find it helpful to consult *The Chicago Manual* (pp. 602–28) for its many examples.

`3. U.S. Department of Commerce, Bureau of the Census, Negro Population 1790-1915 (Washington, D.C., 1918).`

24. *Legal reference.* A note for a decision by a federal court begins with the title of the case (*Chicago Manual* says to underline or italicize it; Turabian says to underline or italicize it only in the text). The source is identified by volume number, the abbreviated title of the official court report (in the example below, "U.S." stands for *United States Supreme Court Reports*), and the page number. In the first note citing the decision, include the year in parentheses. Federal court decisions are usually cited only in the text or notes and not in the bibliography. If your paper has many legal citations, consult *The University of Chicago Manual of Legal Citation* (1989) or *A Uniform System of Citation,* 15th ed. (Harvard Law Review Association, 1991).

`4. Brown v. Board of Education, 347 U.S. 483 (1954).`

25. *Unpublished dissertation or thesis.* The title is enclosed in quotation marks. The work is identified as dissertation or thesis in the parentheses enclosing the publication information, which consists of the name of the college or university and the date.

`5. James Hugo Johnston, "Race Relations in Virginia and Miscegenation in the South, 1776-1860" (Ph.D. diss., University of Chicago, 1937).`

26. *Personal communication.* Citations for information gained in personal conversations or by letter, e-mail, or telephone may be included in the text, in informal notes, or in more formal ones. Because personal communications are not usually available to the public, they do not need to be included in a bibliography.

`6. Theodore Thomas informed me by telephone in January 1995 that the film had been seven years in the making.`

or

`6. Theodore Thomas, telephone conversation with author, 10 January 1995.`

27. *Secondary source.* Include publication information both for the primary source (if that information is available) and for the secondary source. If the purpose of the note is to indicate where you found the primary-source information, list the primary source first. If, however, you are focusing on the secondary source's quoting of the primary source, start the note with the secondary source.

7. Burr Cartwright Brundage, Lords of Cuzco: A History and Description of the Inca People in Their Final Days (Norman, Okla.: University of Oklahoma Press, 1967), 160, quoted in John Felstiner, Translating Neruda: The Way to Macchu Picchu (Stanford, Calif.: Stanford University Press, 1980), 264.

or

7. John Felstiner, Translating Neruda: The Way to Macchu Picchu (Stanford, Calif.: Stanford University Press, 1980), 264, quoting Burr Cartwright Brundage, Lords of Cuzco: A History and Description of the Inca People in Their Final Days (Norman, Okla.: University of Oklahoma Press, 1967), 160.

CMS Shortened Notes

The first time a source is cited, the note should contain complete publication information, as shown in the examples above. Subsequent references to a source, however, may be shortened, using only the last name of the author (or authors) and the page reference. (If two or more authors have the same last name, use their initials or first names in all notes.) The title of the work should be included in long papers, such as theses and dissertations, but is necessary in shorter papers only if two or more works by the same author are cited. A long title may be shortened to a key phrase in the title.

1. *Shortened reference to a book.*

1. Roy, 125.

or

1. Roy, Frontier Women, 125.

2. *Shortened reference to a part of a book.* If the source needs to be named, use the title of the chapter or selection but not the title of the book.

```
2. Garrard, "Parties, Members and Voters," 145.
```

3. *Shortened reference to an article.* If the source needs to be named, use the article title but not the name of the periodical.

```
3. Dunbar-Nelson, "People," 78.
```

If the article is not signed, use the article title or a shortened version of it.

```
4. "Garrison Predicts Success," 2.
```

4. *"Ibid." for successive references to the same source.* If there are two or more notes in a row to the same page of the same work, the abbreviation "ibid." (from the Latin *ibidem,* meaning "in the same place") may be used for the second and subsequent notes.

```
5. Ibid.
```

However, if the note is to a different page in the work, use "ibid." and the page number.

```
6. Ibid., 130.
```

CMS Bibliography

For short papers with only a page or two of notes, a bibliography may be optional because the reader can easily spot the bibliographic information for the sources consulted. But for longer papers, a separate bibliography is an aid to the reader because it can be difficult to locate the first note for a source among pages and pages of notes. Find out whether your instructor wants you to provide a bibliography.

Bibliographic entries contain essentially the same information as the first note for a source, but there are some variations in format. First, the name of the author (the first author, if there is more than one) is inverted, last name first, because the bibliography is arranged alphabetically by last name. Second, the elements in a bibliographic entry are separated by periods rather than commas, and parentheses do not enclose the publication information. The examples that follow explain additional variations for specific kinds of sources.

The first line of a bibliographic entry begins at the left margin, and subsequent lines are indented. Turabian's *Manual for Writers* specifies an indentation of five spaces and single-spacing within entries but double-spacing between them. *The Chicago Manual* specifies an indentation of three to four spaces for the second and subsequent lines and double-spacing both within and between entries. Find out which style your instructor prefers.

The bibliography may be titled "Selected Bibliography," "Works Cited," or "Sources Consulted." This last choice is appropriate if you have used interviews or other nonprint sources.

1. *Book with one author.*

Jeffrey, Julie Roy. Frontier Women: The Trans-Mississippi West 1840-1860. New York: Hill and Wang, 1979.

2. *Book with more than one author.* Semicolons may be used to separate the names of three or more authors.

Hudson, Travis; Thomas Blackburn; Rosario Curletti; and Janice Timbrook. The Eye of the Flute: Chumash Traditional History and Ritual as Told by Fernando Librado Kitsepawit. Santa Barbara, Calif.: Santa Barbara Museum of Natural History, 1977.

Tedlock, Dennis, and Barbara Tedlock. Teaching from the American Earth: Indian Religion and Philosophy. New York: Liveright, 1975.

3. *Book with a group or corporate author.*

University of Chicago Press. The Chicago Manual of Style. 14th ed. Chicago: University of Chicago Press, 1993.

4. *Book with an editor.*

Smith, H. Shelton; Robert T. Handy; and Lefferts A. Loetscher, eds. American Christianity. New York: Scribner's, 1960.

5. *Book with an editor or translator and an author.*

Fuentes, Carlos. Burnt Water. Translated by Margaret Sayers Peden. New York: Farrar, Straus and Giroux, 1980; New York: Noonday Press, 1986.

6. *Foreword or introduction.*

Tanner, Tony. Introduction to Pride and Prejudice, by Jane Austen. 1813. Reprint, edited by Tony Tanner, New York: Penguin, 1980.

7. *Book without a listed author or editor.* These entries are listed alphabetically by the first main word in the title. If the first word is *a* or *the,* it may be transposed to the end of the title, preceded by a comma.

Dorothea Lange. With an essay by Christopher Cox. Vol. 5 of Aperture Masters of Photography. New York: Aperture, 1987.

8. *Book edition other than the first.*

Smith, Lacy Baldwin. This Realm of England. 5th ed. Lexington, Mass.: D. C. Heath, 1988.

9. *Selection in an edited book.*

Garrard, John. "Parties, Members and Voters After 1867." In Later Victorian Britain, edited by T. R. Gourvish and Alan O'Day. New York: St. Martin's Press, 1988.

10. *Letter in a published collection.*

Queen Victoria. Letter to Vicky, 28 January 1863. Queen Victoria in Her Letters and Journals, edited by Christopher Hibbert. New York: Viking Penguin, 1985.

11. *Volume in a multivolume series.*

Hughes, Paul L., and James F. Larkin, eds. Tudor Royal Proclamations. Vol. 1 of The Early Tudors (1485-1553). New Haven: Yale University Press, 1964.

12. *Article in a journal.*

Snyder, Gary. "Cold Mountain Poems." Evergreen Review 2, no. 6 (autumn 1958): 69-80.

13. *Article in a magazine.*

Rogers, Warren. "The Persecution of Clay Shaw." *Look*, 26 August 1969, 60.

14. *Article in a daily newspaper.* News items are rarely listed separately; articles from special sections are treated like articles from general-interest magazines.

Krauss, Clifford. "Twenty-Eight Years after Assassination, Conspiracy Theories Refuse to Die." *New York Times*, 5 January 1992, 18(N).

15. *Interview, published or broadcast.*

Smith, Huston. Interview by Bill Moyers. *The Wisdom of Faith: A Personal Philosophy, Part 5*. Public Broadcasting System, 28 April 1996.

16. *Review.*

O'Connor, John J. "An England Where Heart and Purse Are Romantically United." Review of Jane Austen's *Pride and Prejudice* (BBC /A&E television production). *New York Times*, 13 January 1996, 13(L).

17. *Online source.*

Johnson, Eric. "How Jane Austen's Characters Talk" (version 2.0 of *Text Technology: The Journal of Computer Text Processing* 4 [Winter 1994]: 263-67). In Jane Austen Information Page [WWW home page; cited 21 May 1996]. Available from http://www.dsu.edu/~johnsone/austench.html; INTERNET.

18. *Film, videorecording, or other visual material.*

Pride and Prejudice. Directed by Robert Z. Leonard. Produced by Hunt Stromberg. Starring Greer Garson and Laurence Olivier. MGM/UA, 1940. Videocassette.

19. *Sound recording.*

Rodrigo, Joaquin. "Concierto de Aranjuez." On *Rodrigo: Conciertos*. Pepe Romero and Academy of St. Martin in the Fields. Sir Neville Marriner. Philips compact disk 432 828-2.

20. *Public document.*

U.S. Department of Commerce. Bureau of the Census. Negro Population 1790-1915. Washington, D.C.: 1918.

21. *Unpublished dissertation or thesis.*

Johnston, James Hugo. "Race Relations in Virginia and Miscegenation in the South, 1776-1860." Ph.D. diss., University of Chicago, 1937.

22. *Secondary source.* The page number comes immediately after the title if the first-mentioned work is a book. The second-mentioned work is treated in note style, with commas separating the elements and parentheses around the facts of publication of books.

Brundage, Burr Cartwright. Lords of Cuzco: A History and Description of the Inca People in Their Final Days, 160. Norman, Okla.: University of Oklahoma Press, 1967. Quoted in John Felstiner, Translating Neruda: The Way to Macchu Picchu (Stanford, Calif.: Stanford University Press, 1980), 264.

23. *More than one work by an author.* When more than one work by the same author is listed in the bibliography, a long dash can be used in place of the name in the second and subsequent entries. *The Chicago Manual* represents the long dash with three hyphens (---); Turabian's *Manual for Writers* specifies an "eight-space line (made by striking the underscore key eight times)" (________). Find out your instructor's preference. The entries may be arranged alphabetically by title (disregarding introductory articles, such as *a* or *the*) or chronologically; use one method or the other consistently throughout the bibliography.

Dorsey, George A. Traditions of the Skidi Pawnee. Boston: Houghton Mifflin, 1904.

---. The Traditions of the Caddo. Washington, D.C.: Carnegie Institution of Washington, 1905.

---. The Pawnee Mythology. Washington, D.C.: Carnegie Institution of Washington, 1906.

CMS Manuscript Form

Because *The Chicago Manual of Style* is primarily intended for manuscripts that are to be published rather than for manuscripts that are themselves the final product, the format presented here is the one recommended in *A Manual for Writers of Term Papers, Theses, and Dissertations* (6th ed.), by Kate Turabian; its guidelines are more appropriate for most student research papers. Some departments and disciplines have format preferences that may not be identical to these, however. Be sure to check with your instructor.

Margins Leave at least one inch at the top, the bottom, and the sides. Start the first page of the text, the endnotes, and the bibliography about two inches from the top of the page.

Title Page For a term paper, center the name of the university or college near the top of the page. Toward the middle of the page, center the full title of the paper, the course name (including department and course number), the date, and your name.

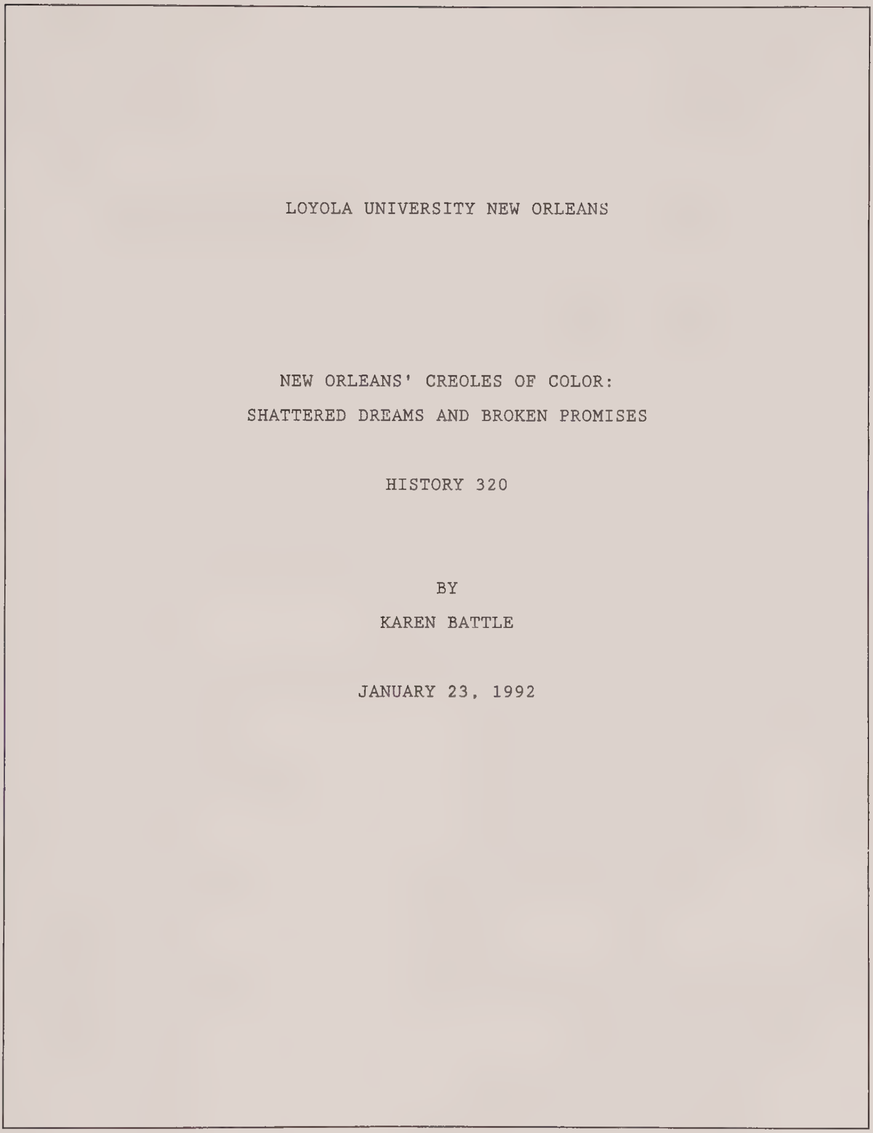
Page Numbers The title page counts as page 1, but it is not numbered. The page number on the first page of text should be centered between the last line of type and the bottom edge of the page. Subsequent pages should be numbered in the top right corner, about three quarters of an inch from the top edge of the paper and an inch from the right edge.

Line Spacing The general text should be double-spaced. In papers not intended for publication, footnotes, endnotes, bibliographies, and block quotations may be single-spaced, with double spaces above and below each entry.

Block Quotations Quotations of two or more lines of poetry or eight or more lines of prose should be set off as block quotations, which are single-spaced and separated from the general text with a blank line above and below. Block quotations are indented four spaces from the left margin; paragraph indentations are an additional four spaces. Quotations of poetry should be line for line as in the original. Because block quotations are set off from the text, they should not begin and end with quotation marks.

Corrections and Insertions If you are using a typewriter rather than a computer and printer, you can use correction paper, correction fluid, or self-correcting typewriter ribbon to delete or insert a character. If more than one character needs to be corrected, the page should be retyped.

CMS-Style Title Page



LOYOLA UNIVERSITY NEW ORLEANS

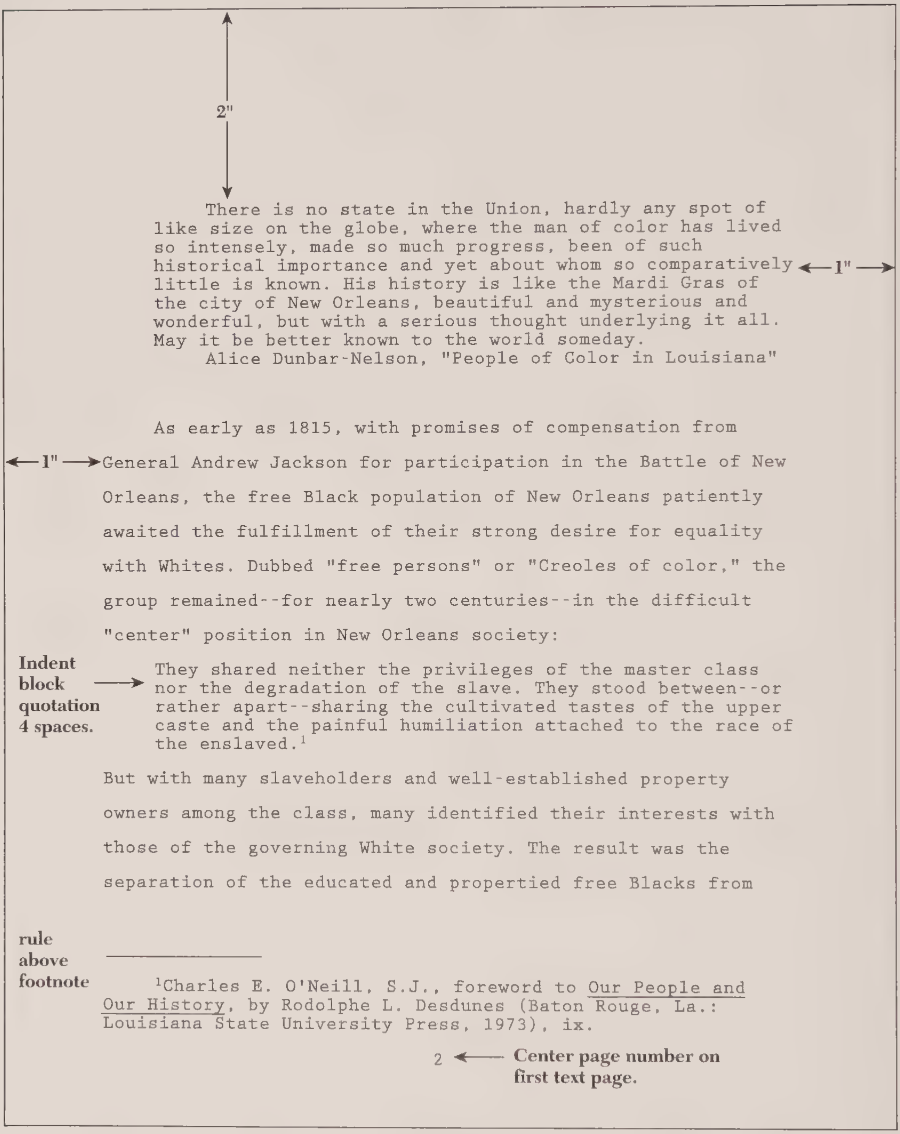
NEW ORLEANS' CREOLES OF COLOR:
SHATTERED DREAMS AND BROKEN PROMISES

HISTORY 320

BY
KAREN BATTLE

JANUARY 23, 1992

CMS-Style First Text Page for Paper with Footnotes



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> There is no state in the Union, hardly any spot of like size on the globe, where the man of color has lived so intensely, made so much progress, been of such historical importance and yet about whom so comparatively little is known. His history is like the Mardi Gras of the city of New Orleans, beautiful and mysterious and wonderful, but with a serious thought underlying it all. May it be better known to the world someday.
>
> Alice Dunbar-Nelson, "People of Color in Louisiana"

1"

1"

As early as 1815, with promises of compensation from General Andrew Jackson for participation in the Battle of New Orleans, the free Black population of New Orleans patiently awaited the fulfillment of their strong desire for equality with Whites. Dubbed "free persons" or "Creoles of color," the group remained--for nearly two centuries--in the difficult "center" position in New Orleans society:

Indent block quotation 4 spaces.

> They shared neither the privileges of the master class nor the degradation of the slave. They stood between--or rather apart--sharing the cultivated tastes of the upper caste and the painful humiliation attached to the race of the enslaved.[1]

But with many slaveholders and well-established property owners among the class, many identified their interests with those of the governing White society. The result was the separation of the educated and propertied free Blacks from

rule above footnote

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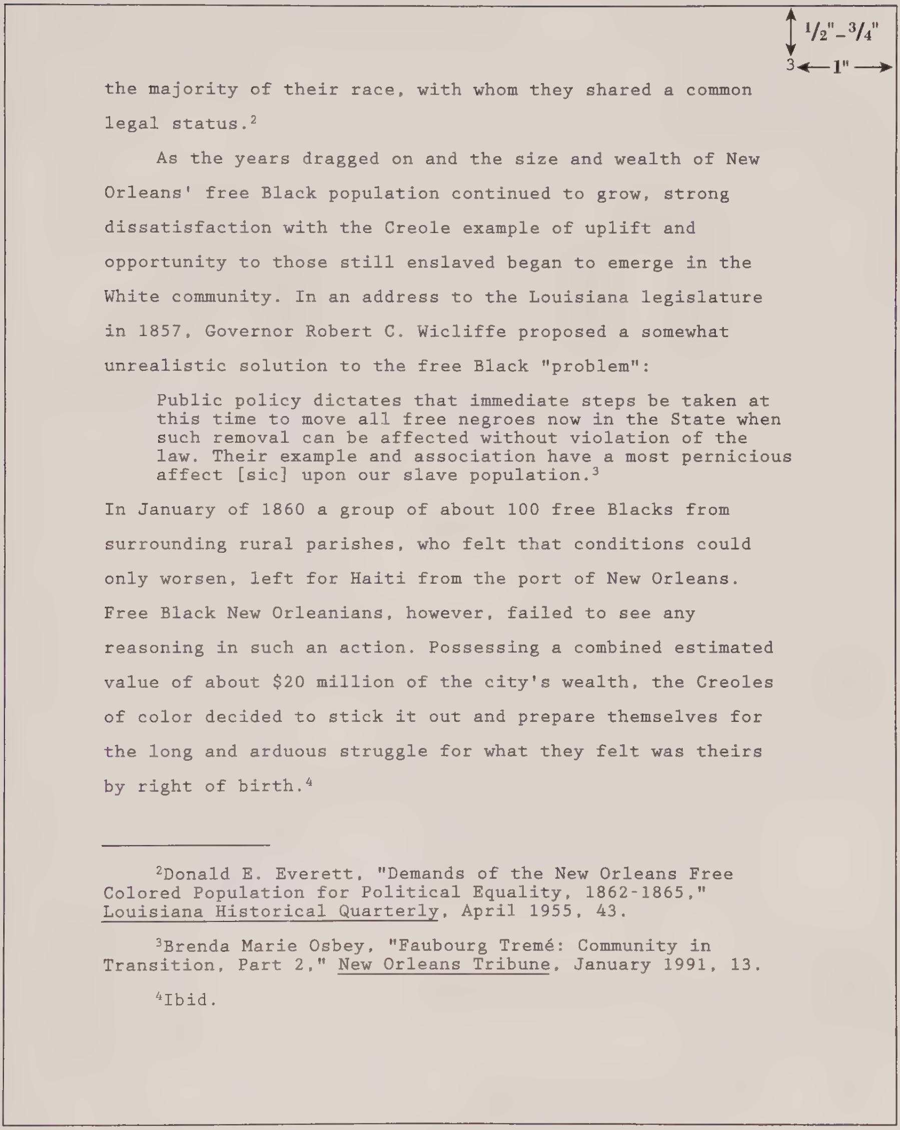
[1] Charles E. O'Neill, S.J., foreword to Our People and Our History, by Rodolphe L. Desdunes (Baton Rouge, La.: Louisiana State University Press, 1973), ix.

2

Center page number on first text page.

CMS-Style Text Page with Footnotes



the majority of their race, with whom they shared a common legal status.[2]

As the years dragged on and the size and wealth of New Orleans' free Black population continued to grow, strong dissatisfaction with the Creole example of uplift and opportunity to those still enslaved began to emerge in the White community. In an address to the Louisiana legislature in 1857, Governor Robert C. Wicliffe proposed a somewhat unrealistic solution to the free Black "problem":

> Public policy dictates that immediate steps be taken at this time to move all free negroes now in the State when such removal can be affected without violation of the law. Their example and association have a most pernicious affect [sic] upon our slave population.[3]

In January of 1860 a group of about 100 free Blacks from surrounding rural parishes, who felt that conditions could only worsen, left for Haiti from the port of New Orleans. Free Black New Orleanians, however, failed to see any reasoning in such an action. Possessing a combined estimated value of about $20 million of the city's wealth, the Creoles of color decided to stick it out and prepare themselves for the long and arduous struggle for what they felt was theirs by right of birth.[4]

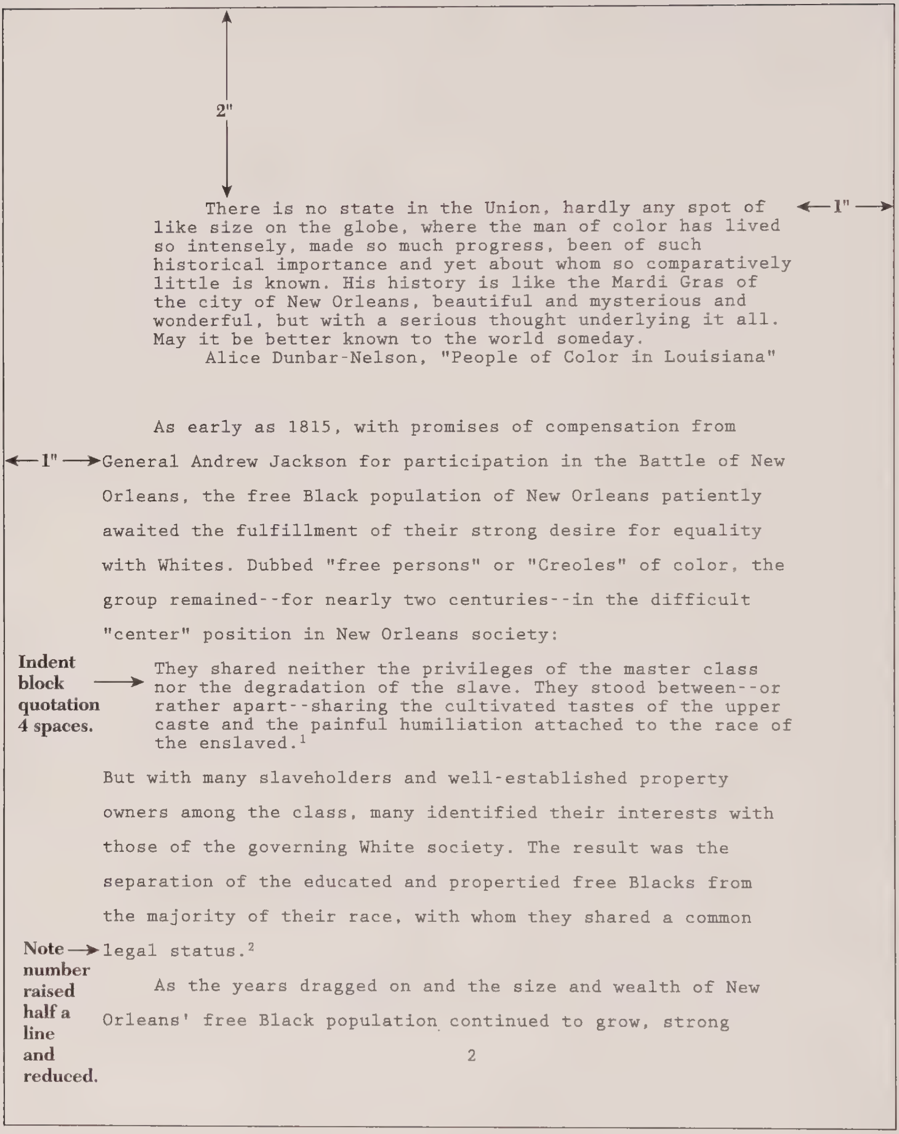
---

[2] Donald E. Everett, "Demands of the New Orleans Free Colored Population for Political Equality, 1862-1865," Louisiana Historical Quarterly, April 1955, 43.

[3] Brenda Marie Osbey, "Faubourg Tremé: Community in Transition, Part 2," New Orleans Tribune, January 1991, 13.

[4] Ibid.

CMS-Style First Text Page for Paper with Endnotes



> There is no state in the Union, hardly any spot of like size on the globe, where the man of color has lived so intensely, made so much progress, been of such historical importance and yet about whom so comparatively little is known. His history is like the Mardi Gras of the city of New Orleans, beautiful and mysterious and wonderful, but with a serious thought underlying it all. May it be better known to the world someday.
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As early as 1815, with promises of compensation from General Andrew Jackson for participation in the Battle of New Orleans, the free Black population of New Orleans patiently awaited the fulfillment of their strong desire for equality with Whites. Dubbed "free persons" or "Creoles" of color, the group remained--for nearly two centuries--in the difficult "center" position in New Orleans society:

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But with many slaveholders and well-established property owners among the class, many identified their interests with those of the governing White society. The result was the separation of the educated and propertied free Blacks from the majority of their race, with whom they shared a common legal status.[2]

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As the years dragged on and the size and wealth of New Orleans' free Black population continued to grow, strong

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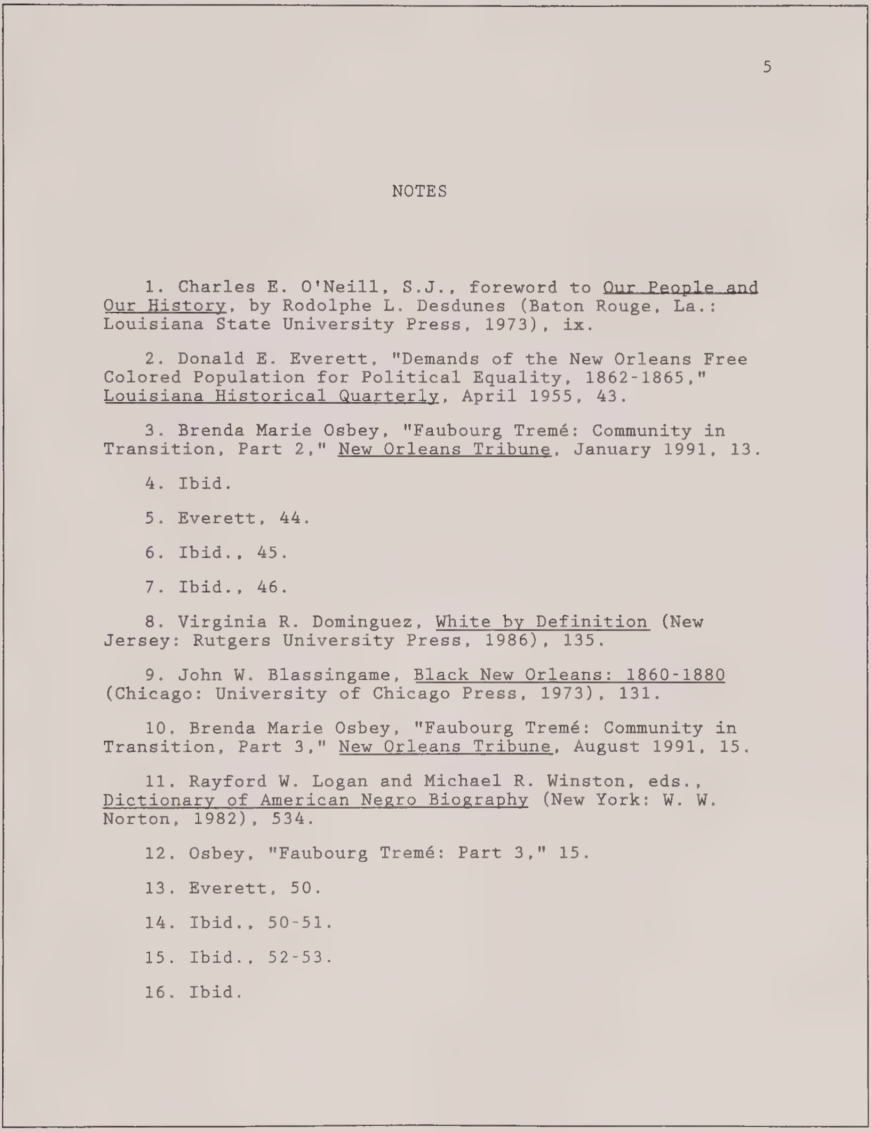
CMS-Style First Page of Endnotes



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NOTES

1. Charles E. O'Neill, S.J., foreword to Our People and Our History, by Rodolphe L. Desdunes (Baton Rouge, La.: Louisiana State University Press, 1973), ix.

2. Donald E. Everett, "Demands of the New Orleans Free Colored Population for Political Equality, 1862-1865," Louisiana Historical Quarterly, April 1955, 43.

3. Brenda Marie Osbey, "Faubourg Tremé: Community in Transition, Part 2," New Orleans Tribune, January 1991, 13.

4. Ibid.

5. Everett, 44.

6. Ibid., 45.

7. Ibid., 46.

8. Virginia R. Dominguez, White by Definition (New Jersey: Rutgers University Press, 1986), 135.

9. John W. Blassingame, Black New Orleans: 1860-1880 (Chicago: University of Chicago Press, 1973), 131.

10. Brenda Marie Osbey, "Faubourg Tremé: Community in Transition, Part 3," New Orleans Tribune, August 1991, 15.

11. Rayford W. Logan and Michael R. Winston, eds., Dictionary of American Negro Biography (New York: W. W. Norton, 1982), 534.

12. Osbey, "Faubourg Tremé: Part 3," 15.

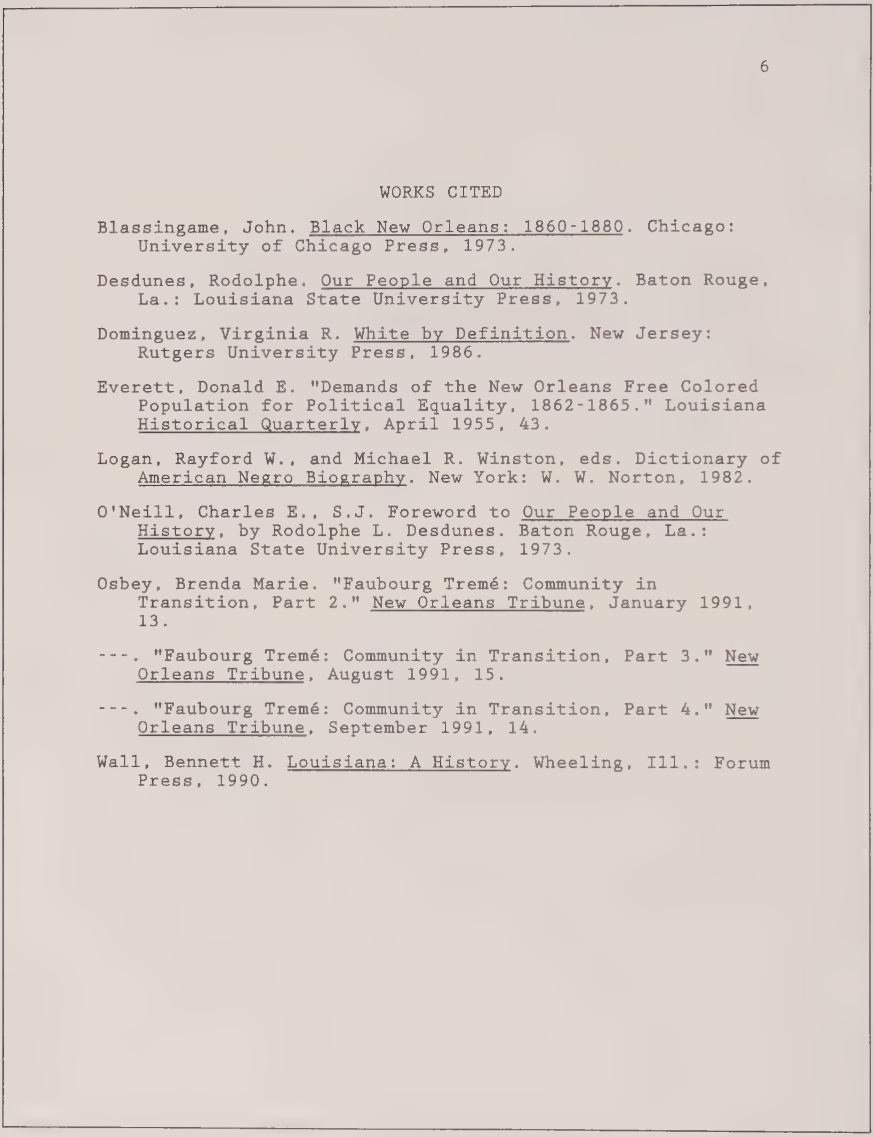
13. Everett, 50.

14. Ibid., 50-51.

15. Ibid., 52-53.

16. Ibid.

CMS-Style Bibliography



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Dominguez, Virginia R. White by Definition. New Jersey: Rutgers University Press, 1986.

Everett, Donald E. "Demands of the New Orleans Free Colored Population for Political Equality, 1862-1865." Louisiana Historical Quarterly, April 1955, 43.

Logan, Rayford W., and Michael R. Winston, eds. Dictionary of American Negro Biography. New York: W. W. Norton, 1982.

O'Neill, Charles E., S.J. Foreword to Our People and Our History, by Rodolphe L. Desdunes. Baton Rouge, La.: Louisiana State University Press, 1973.

Osbey, Brenda Marie. "Faubourg Tremé: Community in Transition, Part 2." New Orleans Tribune, January 1991, 13.

---. "Faubourg Tremé: Community in Transition, Part 3." New Orleans Tribune, August 1991, 15.

---. "Faubourg Tremé: Community in Transition, Part 4." New Orleans Tribune, September 1991, 14.

Wall, Bennett H. Louisiana: A History. Wheeling, Ill.: Forum Press, 1990.

CBE Style

The style manual published by the Council of Biology Editors (CBE)—*Scientific Style and Format: The CBE Manual for Authors, Editors, and Publishers*, 6th ed. (Cambridge University Press, 1994)—is the basic guide for most writing in the life sciences and medicine. In addition to extensive treatment of the conventions for scientific terminology, it presents two systems of documenting references: a name-year system similar to that of APA and a citation-sequence system, which uses superscript numbers in the text that refer to a numbered list of references. (Some scientific journals use some variant of one of these systems, such as citation numbers enclosed in parentheses in the line of text rather than above it; check with your instructor about the preferred citation system for your class.)

The major difference between the CBE system of numbered notes and that of *The Chicago Manual* is that the references in CBE are assigned a number by order of first mention in the paper and the number is repeated whenever that reference is cited in the paper. In general, the goal of the CBE style for entries in the reference list is to minimize the number of keystrokes made by the typist: there are no periods after initials; names of journals and publishers are abbreviated; neither italics nor quotation marks are used with titles of books, journals, or articles.

CBE In-Text Citation Numbers

Superscript numbers in the text refer to numbered references in the reference list at the end of the paper. References are numbered according to the order in which they are first used in the text. Thus, the first reference cited is 1, the second is 2, and so on. Each time the reference numbered 1 is cited in the text, the superscript 1 is used. Two or more citation numbers in one place should be separated by a comma; a sequence of three or more citation numbers, however, should be treated as an inclusive number separated by a hyphen (such as "2–4") rather than as a series (that is, "2,3,4"). The numbers are placed at the point of citation rather than at the end of a sentence or a clause as is the custom for *The Chicago Manual*. MLA, and APA styles.

> `The two prime factors most frequently cited`[1,2] `are evolutionary history and mode of transmission.`

The superscript numbers in this example would correspond to entries 1 and 2 of the paper's reference list.

CBE Numbered List of References

The reference list, which begins on a new page after the end of the text, should be titled "References" or "Cited References." (Sources that were consulted but are not cited in the text may be listed under a separate heading, such as "Additional References" or "Bibliography.") The entries are numbered sequentially according to their first mention in the text.

The basic order of elements in a reference entry is the name of the author or authors, the title of the book or article, publication information, and pages. Each element ends with a period; periods are not used after initials or abbreviations. A comma is used to separate items of equal importance, such as authors' names. A semicolon is used to separate items that are parts of an element but are not directly related, such as the date of publication of a journal and the volume number or the publisher of a book and the year of publication. A colon indicates that what follows is subordinate to the material before it, such as a subtitle or the page numbers following the volume number of a journal. Examples of the most common kinds of references are shown here and explained in more detail in *The CBE Manual;* for more specialized examples, consult the *National Library of Medicine Recommended Formats for Bibliographic Citation* (1991), which is the primary source of CBE citation style.

BOOKS

The formats described here can apply to booklets, pamphlets, and brochures as well as to books.

1. *Book with one or more authors.* The names of all authors are reversed. If there are more than ten authors, the first ten are listed, followed by "and others." First initials rather than first names are used in most cases. No periods are used after the initials, and no comma is used between the last name and the initials.

Only the first word, proper nouns, proper adjectives, and capitalized abbreviations (such as AIDS) are capitalized in the title. In contrast to the APA documentation system, which also uses a lowercase style for titles, the first word of a subtitle is not capitalized in CBE bibliographic entries. Nor are titles italicized or underlined.

The name of the publisher is usually shortened. Drop conventional commercial designations, such as "Company," "Inc.," and "Press," unless doing so would cause ambiguity. In that case, abbreviate the term—"Pr" for "Press," for example. (Appendix 2 in *The CBE Manual* further explains the rules for shortening publishers' names and provides a list of examples.) The last element in book entries is the total number of pages in the book (including back matter, such as the index) followed by "p" (for "pages").

```
1. Mandelbrot BB. The fractal geometry of nature. San
     Francisco: WH Freeman; 1995. 460 p.
```

2. *Book with one or more editors.* Follow the names with the word "editor" (or "editors").

2. Briggs DEG, Crowther PR, editors. Paleobiology: a synthesis. Cambridge (MA): Blackwell Scientific; 1992. 608 p.

3. *Book with an organization as author.* Organization names are shortened according to the CBE rules for shortening publishers' names (described in example 1).

3. British Medical Assoc. A code of practice for sterilisation of instruments and control of cross infection. London: British Medical Assoc; 1989. 58 p.

4. *Book without an author or editor named.* To indicate that no author or editor is listed on the title page or elsewhere, start the entry with "[Anonymous]."

4. [Anonymous]. Social aspects of AIDS prevention and control programmes. Geneva: World Health Organization; 1988. 174 p.

5. *Book edition other than the first.* Include the edition number in abbreviated form after the title. Use "rev ed" as the abbreviation for "revised edition."

5. McCurnin DM, editor. Clinical textbook for veterinary technicians. 2nd ed. Philadelphia: WB Saunders; 1993. 816 p.

6. *Translated book.* Include the name of the translator after the title. If there is an editor in addition to the author, put the editor's name after the translator's and separate the two with a semicolon. After the number of pages, the title in the original language may be included.

6. Spindler K. The man in the ice: the discovery of a 5,000-year-old body reveals the secrets of the Stone Age. Osers E, translator. New York: Random House; 1994. 305 p. Translation of: Mann im eis.

7. *Volume in a multivolume series.* The title of the series precedes the volume number and title of the volume being cited. The total pages of the volume are not necessary.

7. Legendre P, Legendre L, editors. NATO ASI series. Volume G14, Developments in numerical ecology. Berlin: Springer-Verlag; 1989.

8. *Chapter or part of book by author of book.* The title of the book follows the author's name. The title of the part (as well as any other pertinent identification, such as the number or type of the part) follows the publication information. The page numbers of the part are the last element in the entry. (Note that in inclusive page numbers, only the changed digits in the second number are shown.)

8. Bakker RT. The dinosaur heresies. New York: Zebra; 1986. The twilight of the dinosaurs; p. 442-4.

9. *Chapter or part of book not by author or editor of book.* The entry begins with the name of the author of the part and the title of the part. Then the book is identified. The last element in the entry, following the publication information, is the page numbers of the part.

9. Benton MJ. Red queen hypothesis. In: Briggs DEG, Crowther PR, editors. Paleobiology: a synthesis. Cambridge (MA): Blackwell Scientific; 1992. p. 119-23.

PERIODICALS

10. *Article in a journal.* If there are more than ten authors, list the names of the first ten, followed by "and others." Capitalize only the first word, proper nouns, proper adjectives, and capitalized abbreviations (such as AIDS) in article titles. To indicate a type of article—such as editorial, interview, or letter to the editor—enclose the descriptor in square brackets immediately after the article title.

Journal titles longer than one word are abbreviated according to the standard form used in most biological and medical journals: articles, conjunctions, and prepositions are dropped unless they are part of a name or a scientific or technical term; at least the last two letters of all remaining words are dropped (for example, "Microbiology" is abbreviated "Microbiol" and "Journal" is abbreviated "J"). The first letter of each word in a journal title is capitalized. Appendix 1 in the *CBE Manual* provides a table of standard abbreviations of words that are frequently used in journal titles.

The month and issue number may be omitted for journals that are paginated by volume. The year, volume number, and inclusive page numbers are separated by punctuation marks that have no space before or after them. In inclusive page numbers, only the digits that change in the second number are included.

10. Lenski RE, May RM. The evolution of virulence in parasites and pathogens: reconciliation between two competing hypotheses. J Theoret Biol 1994;169:253-65.

11. *Article by organizational author.*

`11. North Am Assoc for the Study of Obesity. Position paper: guidelines for the approval and use of drugs to treat obesity. Obes Res 1995;3:473-8.`

12. *Article on discontinuous pages.* Use a comma and a space between discontinuous page numbers.

`12. Pugh, CB, Waller AE, Marshall SW. Physical activity and public health. JAMA 1995;274:533, 535.`

13. *Article in a journal paginated by issue.* If each issue of a periodical begins with page 1 (instead of only the first issue each year), include the issue number in parentheses after the volume number.

`13. Frederich RC. Leptin levels reflect body lipid content in mice: evidence for diet-induced resistance to leptin action. Nat Med 1995;1(12):11-4.`

14. *Article in a supplement to an issue.* Include the supplement number and the abbreviation "Suppl" in parentheses after the volume number.

`14. Piot P, Kapita BM, Were JBO. The first decade and challenge for the 1990s. AIDS 1995;5(1 Suppl):1S-5S.`

15. *Newspaper article.* Names of newspapers and magazines are not abbreviated like those of journals. If the location of a newspaper is not included in its title, add that information in parentheses after the title. The date of the article is given in year-month-day form, and a three-letter abbreviation is used for the month. Because the pagination can be different in different editions, the section and column as well as the page should be identified.

`15. Luoma JR. List of endangered species said to come too late to help. New York Times 1992 Mar 16;Sect C: 2(col 1).`

16. *Magazine article.* If a general-interest magazine uses volume and issue numbers, the entry can be formatted exactly like that of a journal article (see example 12). If not, use the date of publication in year-month-day form; the month may be written out in full or abbreviated.

`16. Lerner EJ. Space weather. Discover 1995 Aug:54-61.`

OTHER SOURCES

17. *Conference proceedings.* The editor may be a person or an organization. If the report has a title that is different from the conference name,

include it after the editor's name. After the date and location of the conference, include the publication and page information that would be included for a book.

`17. World Council of Churches [WCC], editor. Report of second WCC international consultation on AIDS and pastoral care; 1988 Dec 12-20; Moshi, Tanzania. Geneva: WCC /Christian Commission; 1990. 237 p.`

18. *Scientific or technical report.* Begin the entry with the author or the issuing agency. The publisher may be the sponsoring organization or government agency rather than a commercial publishing company. If there is a report number (identified with "Report nr") or a contract number (identified with "Contract nr"), include it as a separate element between the date of publication and the number of pages. End the entry with an availability statement, including the publication number, if there is one.

`18. Public Health Service (US). Healthy people 2000: national health promotion and disease prevention objectives. Full report, with commentary. Washington: Department of Health and Human Services; 1990. 692 p. Available from: DHHS, Washington; PHS 91-50212.`

19. *Dissertation or thesis.* After the title, specify, in square brackets, the type of document (such as "dissertation" or "MSc thesis"). As publication information, give the location and name of the institution granting the degree and the year the document was completed. Include an availability statement at the end of the entry if the document was found somewhere other than the library of the institution for which the document was written.

`19. Seip D. Factors limiting woodland caribou populations and their interrelationships with wolves and moose in southeastern British Columbia [dissertation]. Seattle: University of Washington; 1990. 60 p. Available from: University Microfilms, Ann Arbor, MI; AAD14-94.`

20. *Audiovisual materials.* The title and identification of the medium comes before the name of the author or editor. The entry also includes the name of the producing company, if it is different from the publisher, and a physical description—such as the number of cassettes, the running time, or the slide size. An availability statement and a description of accompanying materials (such as an instructor's guide or a script) may be included at the end of the entry.

20. Battered [videocassette]. Grant L. New York: HBO Project Knowledge; 1991. 1 videocassette: 56 min, sound, color, 1/2 in. Accompanied by: study guide. Available from: Ambrose Video Publishing, New York, NY.

ELECTRONIC SOURCES

In addition to the information that would be given for a printed book or journal article, an entry for an electronic source needs to identify the type of medium and provide enough information for retrieval of the document. If the document is one that can be modified or updated at any time, the date of access needs to be included in the entry.

21. *Electronic journal article.* Although *The CBE Manual* does not say to, it is useful to add the online address to ensure that the article can be retrieved.

21. Sereno PC, Dutheil DB, Iarochene M, Larsson HCE, Lyon GH, Magwene PM, Sidor CA, Varrichio DJ, Wilson JA. Predatory dinosaurs from the Sahara and Late Cretaceous faunal differentiation [abstract]. SCIENCE On-Line [serial online] 1996 May 17;272(5264):986-91. Available from: MedWeb via the INTERNET; http://science~mag.aaas.org /science /scripts /display/short /272 /5264 /986.html?alt. Accessed 1996 May 21.

22. *Electronic book or monograph.*

22. Johnson B. A primer on health risk communication principles and practices. Washington: Agency for Toxic Substances and Disease Registry, US Dept of Health and Human Services, 1987. Available from: MedWeb via the INTERNET; http://atsdrl.atsdr.cdc.gov:808 /HEC /primer.html. Accessed 1996 May 21.

CBE Manuscript Form

Like *The Chicago Manual of Style, The CBE Manual* is intended for publishers and editors of books and journals rather than for students. Because *The CBE Manual* is more about the content than the form of various elements of a paper, the manuscript form described here is based on that generally recommended for college papers. Different disciplines have different specifications for research papers, however, so you should find out whether your instructor has any particular requirements for your papers.

In general, scientific papers have a critical-argument structure and begin with an abstract, which, usually in one paragraph, summarizes the contents of the paper. Then they pose a question or hypothesis (in a section usually titled "Introduction"), present and assess evidence for and against the hypothesis, and reach a conclusion (in a section titled "Conclusion" or "Discussion and Conclusion"). Research reports (such as lab reports or reviews of the literature about a particular topic) usually also include a section, entitled "Methods" or "Methods and Materials," after the introduction describing the way the research was done. The list of references (usually titled "References" or "Cited References") begins on a separate page after the conclusion of the paper.

Margins and Spacing Margins on the right and left sides should be at least one inch, as should the margins at the top and the bottom. Double-space throughout the paper, including block quotations and the reference list.

First Page Begin with your name, the name of the course, and the date on separate lines, each starting at the left-hand margin. Then double-space and center the title. The abstract (titled "Abstract") follows the title after two double spaces. If there is room after the abstract, the introduction can begin on the first page as well. (Some instructors may prefer a separate title page; be sure to find out.)

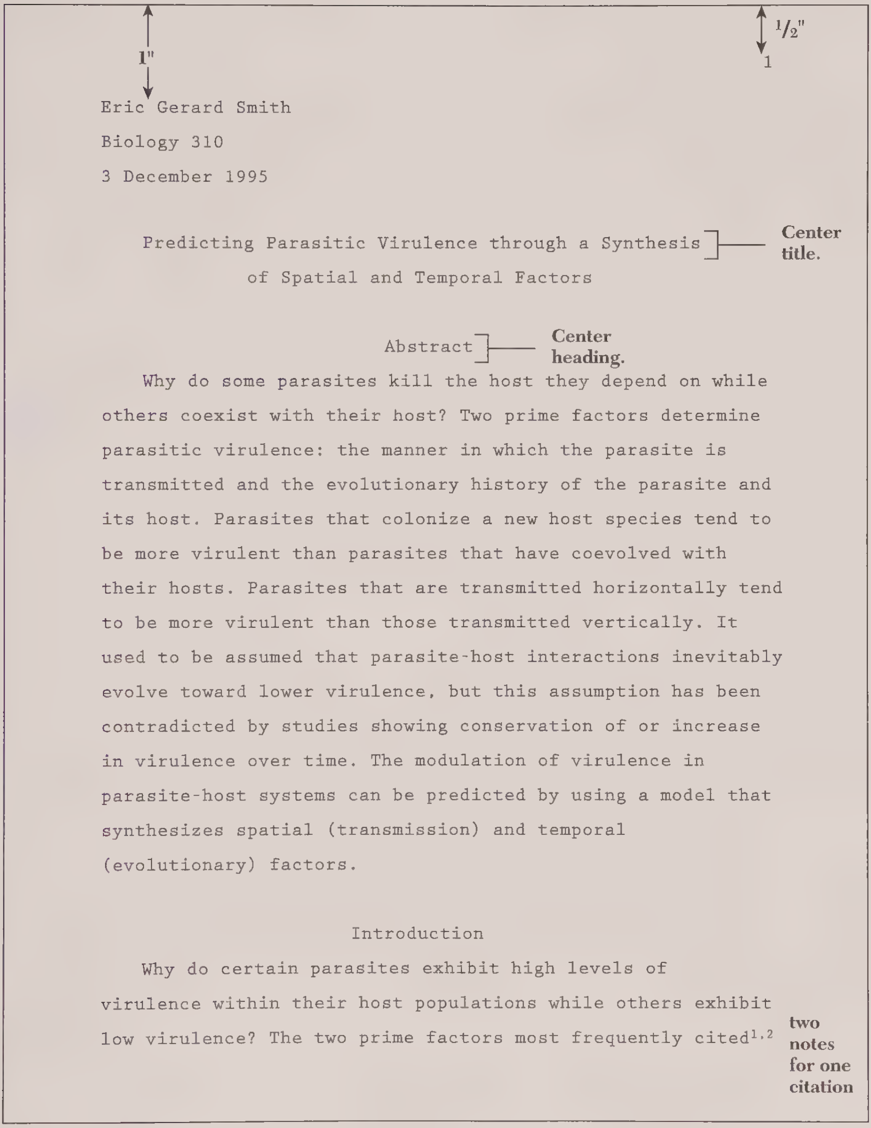
Title For scientific papers, the title should be as specific as possible—without being excessively long. It should, if possible, start with the word or term representing the most important aspect of the subject paper. A subtitle can be used to describe research design (such as "A Randomized, Controlled Trial").

Headings To indicate the main divisions of the paper—such as the abstract, the introduction, the conclusion, the reference list—use headings. You may also use subheadings within these divisions to indicate subtopics. Typically, the first level of heading is centered on the page, with two double spaces above it, and the second level starts at the left margin, also with two double spaces above it.

Page Numbers Page numbering starts with the first page. The numbers are typed in the upper right corner, about half an inch from the top of the page.

Italic and Bold Type According to the conventions of scientific and mathematical writing, some terms are written in italics and others in bold type (such as vectors in mathematical expressions). If you are using a word

CBE-Style First Page



Eric Gerard Smith
Biology 310
3 December 1995

Predicting Parasitic Virulence through a Synthesis of Spatial and Temporal Factors

Center title.

Abstract

Center heading.

Why do some parasites kill the host they depend on while others coexist with their host? Two prime factors determine parasitic virulence: the manner in which the parasite is transmitted and the evolutionary history of the parasite and its host. Parasites that colonize a new host species tend to be more virulent than parasites that have coevolved with their hosts. Parasites that are transmitted horizontally tend to be more virulent than those transmitted vertically. It used to be assumed that parasite-host interactions inevitably evolve toward lower virulence, but this assumption has been contradicted by studies showing conservation of or increase in virulence over time. The modulation of virulence in parasite-host systems can be predicted by using a model that synthesizes spatial (transmission) and temporal (evolutionary) factors.

Introduction

Why do certain parasites exhibit high levels of virulence within their host populations while others exhibit low virulence? The two prime factors most frequently cited[1,2]

two notes for one citation

CBE-Style Page

2

are evolutionary history and mode of transmission. Incongruently evolved parasite-host associations are characterized by high virulence, while congruent evolution may result in reduced virulence[2]. Parasites transmitted vertically (from parent to offspring) tend to be less virulent than parasites transmitted horizontally (between unrelated individuals of the same or different species). Studies that show an increase in virulence during parasite-host interaction, such as Ebert's experiment[3] with *Daphnia magna*, necessitate a synthesis of traditionally discrete factors to predict a coevolutionary outcome. Changes in virulence during parasite-host interaction are better described as modulation than as increase or decrease, because the word *modulation* implies the potential for an inclusive, predictive paradigm for parasite-host interaction.

single note

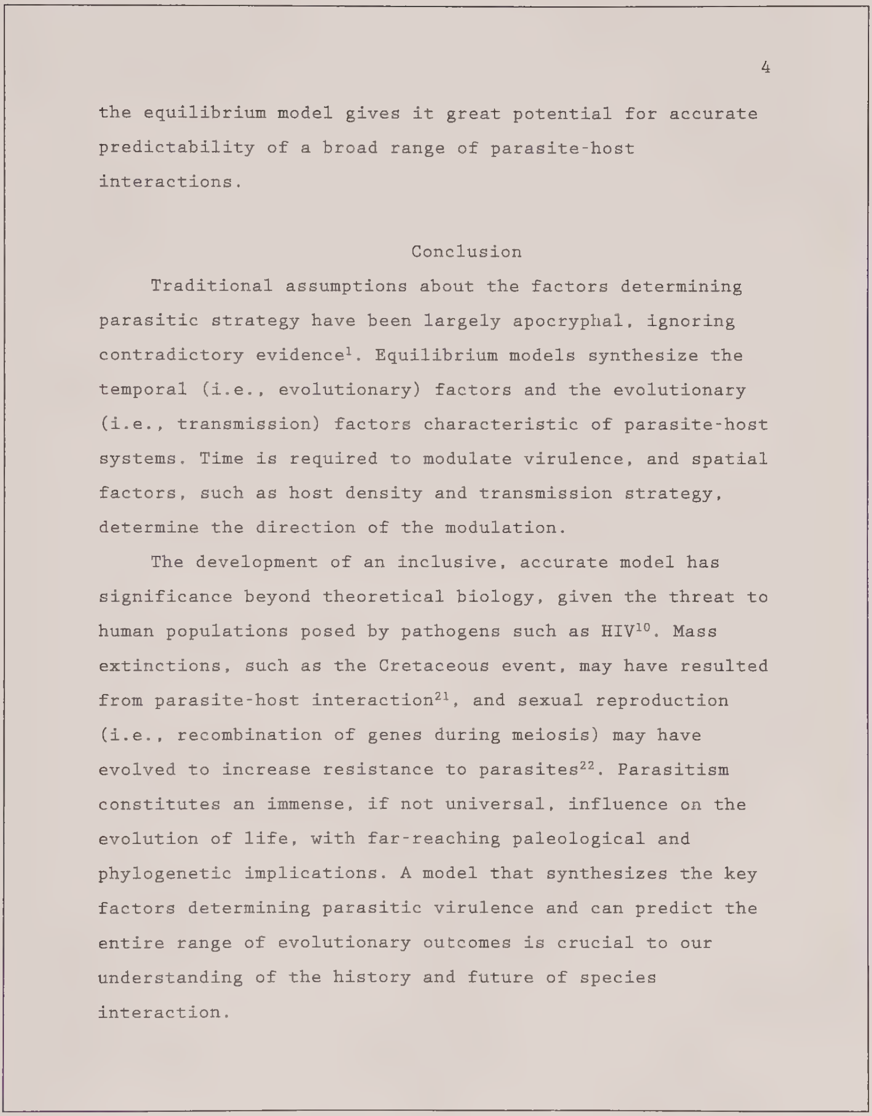
Foreign words may be italicized or underlined.

Methods

Evolutionary history and mode of transmission will first be considered separately in this paper and then integrated by means of an equation discussed by Antia, Levin, and May[4] and a model proposed by Lenski and May[5]. Transmission is defined by host density and specific qualities of host-parasite interaction. It is a spatial factor that gives direction to the modulation of virulence. Evolution is a temporal factor that determines the extent of the modulation. The selective pressures of the transmission mode act on parasite

single note

CBE-Style Last Page



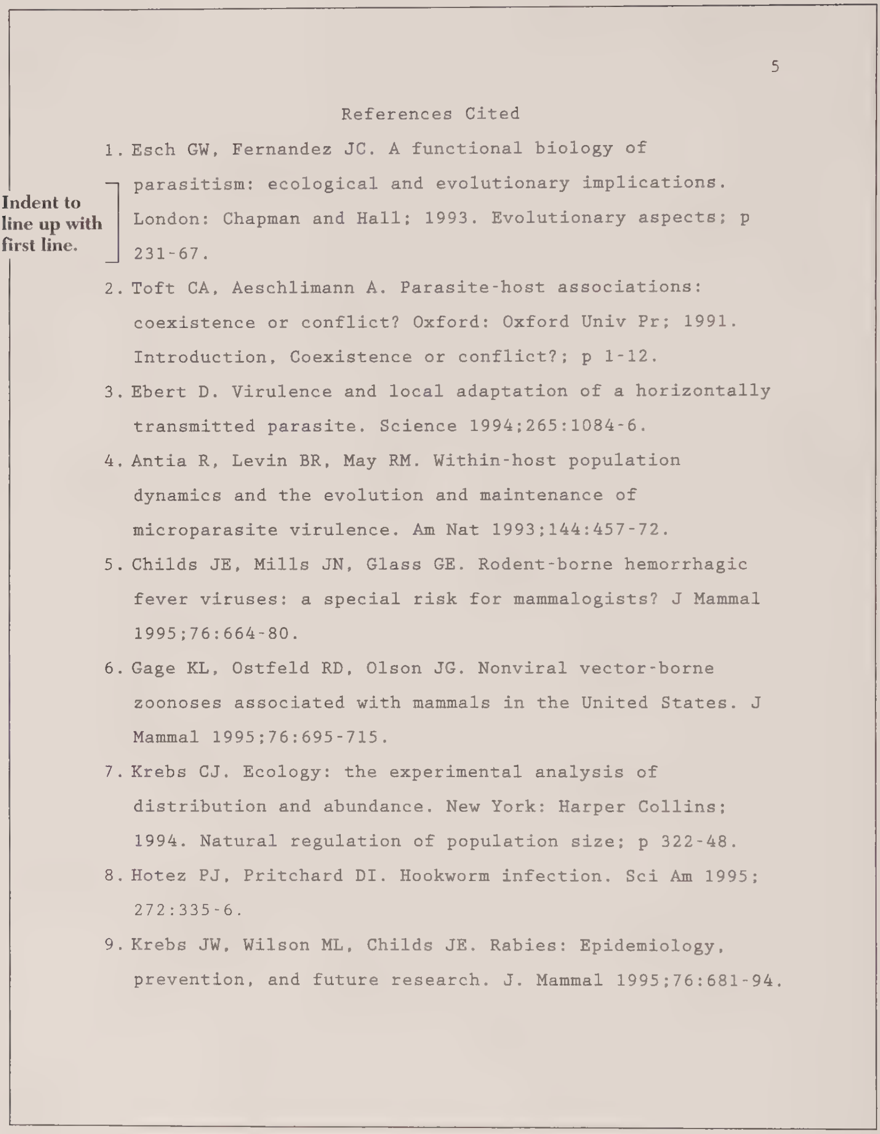
4

the equilibrium model gives it great potential for accurate predictability of a broad range of parasite-host interactions.

Conclusion

Traditional assumptions about the factors determining parasitic strategy have been largely apocryphal, ignoring contradictory evidence[1]. Equilibrium models synthesize the temporal (i.e., evolutionary) factors and the evolutionary (i.e., transmission) factors characteristic of parasite-host systems. Time is required to modulate virulence, and spatial factors, such as host density and transmission strategy, determine the direction of the modulation.

The development of an inclusive, accurate model has significance beyond theoretical biology, given the threat to human populations posed by pathogens such as HIV[10]. Mass extinctions, such as the Cretaceous event, may have resulted from parasite-host interaction[21], and sexual reproduction (i.e., recombination of genes during meiosis) may have evolved to increase resistance to parasites[22]. Parasitism constitutes an immense, if not universal, influence on the evolution of life, with far-reaching paleological and phylogenetic implications. A model that synthesizes the key factors determining parasitic virulence and can predict the entire range of evolutionary outcomes is crucial to our understanding of the history and future of species interaction.



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processor, you can easily switch to italic or bold type. If you are using a typewriter, however, you must indicate italics by underlining the word or letter. To indicate boldface, draw a wavy line underneath the word or letter (for example, “matrix A”).

Style Manuals

In addition to the styles described in detail in this section, many professional organizations publish manuals that prescribe reference formats for publications in their fields. For an annotated bibliography of style manuals issued by commercial publishers, government agencies, and university presses in fields ranging from agriculture to zoology, see John Bruce Howell’s *Style Manuals of the English-Speaking World* (Phoenix: Oryx, 1983). The following list is a sampling of style manuals used in various disciplines.

Chemistry: Dodd, Janet S., ed. *The ACS Style Guide: A Manual for Authors and Editors.* 2nd ed. Washington, DC: American Chemical Society, 1986.

Geology: Bates, Robert L., Rex Buchanan, and Marla Adkins-Heljeson, eds. *Geowriting: A Guide to Writing, Editing, and Printing in Earth Science.* 5th ed. Alexandria: American Geological Institute, 1992.

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Index

abbreviated bar graph, figure 15.9, 443
Abstract
  descriptive, 35
  informative, 34
  natural sciences, 34–35, 247, 253–54
  social sciences, 56, 271
  See also IMRAD plan
active voice, 119
AIDA plan, 211
Ala, Mohammad, Mina Ala, and Gordon Bagot, cited, 382
Allais, Maurice, cited, 97
almanacs and yearbooks, 452–53
ambiguous visual message, figure 13.20, 405
American Anthropologist, 53
American Journal of Economics and Sociology, 97, 99, 379
American Journal of Nursing, 381, 383
American Journal of Orthopsychiatry, 98, 99, 376
American Journal of Political Science, 54, 57, 152, 267, 326
American Journal of Psychiatry, 378
American Journal of Psychology, 53
American Journal of Sociology, 152, 154, 268–69, 275, 306, 316, 326
American Political Science Review, 268
American Quarterly, 100
American Sociological Review, 54, 152, 269
amount of detail
  basics, 299
  complications, 299–300
  business, 367–70
    audience and purpose, 367–69
    cost, 369–70
  humanities, 339–41
  natural sciences, 352–57
    in research report, 352–56
    in review article, 356–57
  social sciences, 325–28
    in qualitative research, 327–28
    in quantitative research, 325–27
Anderson, Patrick D., cited, 18
Anker, Roy M., cited, 183
APA format, 56
APA documentation style, 487–98
  in-text citations, 487–89
  manuscript form, 496–98
    block quotations, 497–98
    corrections and insertions, 497
    margins, 496
    page numbers, 496–97
    title page and headings, 496
  reference list, 489–96
    books, 490–92
    electronic sources, 494
    other sources, 495–96
    periodicals, 492–94
Arthur, Brian, cited, 98–99, 101
Atlantic, advertisement in, 174
atlases, 453
attraction and opposition of visual items, figure 13.16, 402
audience, 2, 111, 182–83, 445, 446
  basics, 113–14

continued

audience (*continued*)
  in business writing, 165–67
  complications, 114
  as determiner of detail in business writing, 367–69
  visual adaptations for, 438
Austen-Smith, David, and John R. Wright, cited, 267
"author-date" citation system, 448

balance, 399, 400–03
  and authority, figure 13.15, 402
  in scientific formats, figure 13.17, 403
  between unequal items, figure 13.12, 400
bar charts, 426–27, figure 14.14
bar graph, figure 15.8, 442
Barton, Ellen L., cited, 302
Bassett, John E., cited, xxii
Bazerman, Charles, cited, 152
Becher, Tony, cited, 31
Becker, Howard, and James Carper, cited, 156
Becker, Howard S., cited, 151, 157, 183, 186
Beisel, Nicola, cited, 56
Berkenkotter, Carol, and Thomas N. Huckin, cited, 254, 258, 348
bibliography, working, 453–54
Bjarnason, Thoroddur, and Thorolfur Thorlindsson, cited, 57
Bond, Eleanor F., Margaret M. Heitkemper, and Monica Jarrett, cited, 381
boxed text, figure 13.4, 394
Brady, Joan, cited, 381
Break, Break, Break, 232
brightness, 398
Broadhead, Glenn, and Richard Freed, cited, 217
Bronowski, Jacob, cited, 8
Brontë, Charlotte, 13, 21, 226–28, 236, 239
Brothers, Thomas, cited, 333, 340, 341
Browman, Howard I., Inigo Novales-Flamarique, and Craig W. Hawryshyn, cited, 35–36
Brown, Robert L., and Carl G. Herndl, cited, 73
bullet points, 410–11
Burtt, Shelley, cited, 268
Business and Society, 440
business reports
  analytical, 212–13
  informative, 212
  long, 213–14

Calvert, J. G., et al., cited, 37
CBE style, 435, 519–31
  in-text citation numbers, 519
  manuscript form, 525–31
    first page, 526
    headings, 526
    italic and bold type, 526, 531
    margins and spacing, 526
    page numbers, 526
    title, 526
  numbered list of references, 519–25
    books, 520–22
    electronic sources, 525
    other sources, 523–25
    periodicals, 522–23
central catalog, library, 457–60
Chapman, Clark R., and David Morrison, cited, 252
characters, in typed text, 408–09
charting, in nursing, 382
Chatterton, R. T., Jr., cited, 188, 348
Chatterton, R. T., Jr., G. J. MacDonald, and D. A. Ward, cited, 128, 154
choices, writers', xxi–xxiii
citation indexes, 456
"citation-sequence" system, 448
citing, reasons for, 447–48
clarity in visual messages, 405
CMS Style, 435-38, 498–518
  bibliography, 507–11
  documentary notes, 498–506
    books, 499–502
    other sources, 504–06
    periodicals, 502–03
  manuscript form, 512
    block quotations, 512
    corrections and insertions, 512
    line spacing, 512
    margins, 512
    page numbers, 512
    title page, 512
  shortened notes, 506–07
coherence, 203–05
  basics, 203–04
  business, 218–20
    large-scale, 218–19
    paragraph level, 219–20
  complications, 205
  humanities, 239–40
  natural sciences, 259–60

  in organizational hybrids, 290
  social sciences, 279–80
color, 398
computer search services, 461
confidence level, in statistics, 315
contrast, visual, 399, 400, 403–05, 408
Corruption and the Decline of Rome, 378, 379, 441
Council of Biology Editors Style Manual, cited, 34, 247, 255
Crick, Francis, cited, 184, 186
critical perspective, 331
critical theories, literature, 331
Crossen, Cynthia, cited, 319
crosses, as biological hybrids, xxii

Darnell, James E., Jr., cited, 186
Day, Robert A., cited, 124
deductive reasoning, 199
Denzin, Norman, and Yvonna S. Lincoln, cited, 305–06, 308
detail
  abstract, detail in, 296
  appropriateness of, 298
  concrete, 296
  general, 296
  nature of, 296
  primary, 297
  purpose of, 297
  quality of, 298
  secondary, 297
  sources of, 297–98
  specific, 296
  standardized adaptations of, 375–77
  types of, 297
  unconventional adaptations of, 377–80
  See also kinds of detail; amount of detail
Dewey decimal system, 460
diagrams, 428–30
Diamond, Jared M., cited, 187
diction
  business, 171–72
  humanities, 142–43
  natural sciences, 128–30
  social sciences, 156–57
dictionaries, specialized, 452
dimension, visual 394–96, figures 13.6, 13.7
direction, visual, 396–97, figure 13.10, 398
direct-plan documents, 210
Discussion
  natural sciences, 37–38, 250–51, 257–58
  social sciences, 273
  See also IMRAD plan
Dockery, Douglas W., et al., cited, 256, 354–56
documentation styles
  reasons for differences, 449–50
  traditions, 448–49
documenting, reasons for, 447–48
Dolan, cited, 36–37
Dondis, Donis A., cited, 393
dots, lines, and shapes, 393–94
Dowling, Andrew, cited, 342
Dunn, Bonnie, cited, 99, 376
Dyson, Freeman, cited, 97, 307, 322

Eaton, Robert C., cited, 254
Einstein, Albert, cited, 182
Eliot, George, xxi, 54
encyclopedias, specialized, 452
Endocrinology, 33, 34, 35, 249
establishing a thesis, 3, 5–6
ethnography, 320

Fahnestock, Jeanne, and Marie Secor, cited, 12, 142, 330
Farley, Reynolds, and William H. Frey, cited, 269, 316, 318
The Fatal Shore, 188
"felt axes" and balance, figure 13.13, 401
"felt axes", balance, and imbalance, figure 13.14, 401
"felt axes", balance, and imbalance, figure 13.18, 401
figures, 424–31
flow chart of the writing process, figure 14.18, 430
flow charts, 429
focus
  deciding on,
    business, 74–76
    humanities, 11–14
    natural sciences, 29–33
    social sciences, 52–55
  establishing,
    business, 77–79
    humanities, 14–18
    natural sciences, 33–35
    social sciences, 55–57
  maintaining,
    basics, 7–8
    business, 82–84
    complications, 8
    humanities, 19–22
    natural sciences, 37–38
    social sciences, 60–62

focus groups, 362–63
footers, 416
fonts, 409–10
font samples, figure 14.2, 410
format
  of a business report with an advertising goal, figure 15.4, 438
  in the disciplines, figure 1, 444
  in popular humanities, figure 15.6, 440
  in popular social and natural sciences, figure 15.5, 439
  in a traditional academic business journal, figure 15.7, 440
frequency curves, in statistics, 313–14
frequency of key words, table 2.1, 61
"Funnel Tonality in American Popular Music," 332–33, 339, 340

Gasset, Jose Ortega y, cited, 5
Geertz, Clifford, cited, 96
Gilbert, G. Nigel, and Michael Mulkay, cited, 345
Glass, Jennifer, and Valerie Camarigg, cited, 154, 268–69, 306, 316, 317
Gödel, Escher, Bach, 290
Godfather films, 228–30, 237, 239
Gould, James L., cited, 188
Gould, James L., and Carol Grant Gould, cited, 182
Guide to Reference Books, 451
Guide to the Use of Libraries and Information Services, 451
Guide to Writing and Publishing in the Social and Behavioral Sciences, 272

Handbook of Qualitative Research, 305, 308
Harper's, 440
"Harvard" citation system, 448
headers, 416
headings, 414–16
Heath, Shirley Brice, cited, 322
Heubner, Ann M., and Andrew C. Garrod, cited, 266
Hofstader, Douglas R., cited, 290
"How to Be a Fig," 188, 357
hue, 398
Hughes, Robert, cited, 188
Hummel, Richard, and Gary Foster, cited, 151
hybrids, xxii, 286–90
hypotheses, 9, 29

identity cards, figure 13.3, 393
imbalanced page, figure 13.9, 397
IMRAD plan
  detail in, 347–57
  natural sciences, 31–32, 244–51, 253–60
    Abstract, 247, 253–54
    Discussion, 37-38, 250–51, 257–58
    Introduction, 35, 247–48, 254–55
    Materials and Methods, 37, 248–49, 255–56
    Results, 37, 249–50, 256–57
  social sciences, 62, 271–73
    Abstract, 271
    Discussion, 273
    Introduction, 56, 271–72
    Methods, 272
    Results, 273
indexes, as research tools
  citation, 456
  specialized, 455–56
indirect-plan documents, 211
inductive reasoning, 199
Information Graphics, 408
Inglehart, Ronald, and Paul R. Abramson, cited, 268, 276–78
interlibrary loans, 460
interpretation, in Humanities, 11
Introduction. *See* IMRAD plan
An Introduction to Reasoning, 141, 380

Janzen, Daniel, cited, 32, 188
Johns, Donald, cited, 332–33, 339, 340
Jones, J. H. C., D. G. Ferguson, and K. G. Stewart, cited, 100, 380
Jones, LeRoi (Amiri Baraka), cited, 19
Journal of Anthropological Research, 57, 270, 327
Journal of Business Ethics, 288–89
Journal of Cross-Cultural Psychology, 266, 327
Journal of Interdisciplinary History, 289, 376
Journal of Medicinal Chemistry, 34, 247
Journal of Steroid Biochemistry, 188
justified text, 409

Keller, Evelyn Fox, cited 102
Ketts, Regina, cited, 383
kinds of detail
  basics, 295–96, 297–98
  business, 361–64
    variety, 361–62

    types of primary detail, 362–63
    effective detail, 363–64
  complications, 296–97, 298
  and critical perspective, 331
  humanities, 331–36
    examples, facts, and experts, 332
    examples, 332–34
    complications, 334–36
  natural sciences, 344–50
    appropriate, 346–47
    objective, 347
    quantifiable, 347
    in research reports, 347–50
    in review articles, 356–57
    scientific facts, 344–46
    up-to-date, 346–47
  social sciences, 304–23
    in qualitative and quantitative research, 304–23
King, Martin Luther, Jr., 3, 4, 5
Kirk, Jerome, and Marc L. Miller, cited, 321, 327
Kitada, Yasuyuki, and Toshiaki J. Hara, cited, 257, 258
Krause, George A., 267

large-scale organization
  business, 210–14
    based on audience response, 210–11
    based on document type, 210
    based on purpose, 212–13
    of long reports, 213–14
  humanities, 226–31
    of critical essays, 226–30
    typical features, 230–31
  natural sciences, 245–52
    content and purpose in a research report, 247–51
    of a review article, 251–52
  social sciences, 266–75
    of case studies, 273–75
    IMRAD plan, 271–73
    sampling of models, 266–71
The Last Temptation of Christ, 183
Latour, Bruno, and Steve Woolgar, cited, 345
Laughlin, Charles D., cited, 57, 61, 270
Lewontin, R. C., cited, 344–45
library classification systems, 459–60
Library of Congress subject headings, 458–59
Library of Congress system, 459–60
Life at the Edge, 182
line graphs, 425–26, figures 14.12, 14.13
linking verbs, 119
locating periodicals, 456

MacMullen, Ramsey, cited, 378, 379, 441
Marcus, G. E., and D. Cushman, cited, 321
Martin, J. R., cited, 129
Materials and Methods. *See* IMRAD plan
McClintok, Barbara, cited, 102
McFadden, Margaret T., cited, 16
McMillan, Victoria E., cited, 125
mean, in statistics, 313
median, in statistics, 313
Merton, Robert K., cited, 185
The Mill on the Floss, xxi
MLA Style, 461–86
  information notes, 465
  in-text citations, 462–65
  list of Works Cited, 465–74
    books, 466–68
    electronic sources, 470–71
    other sources, 471–74
    periodicals, 468–70
  manuscript form, 474–77
    block quotations, 476–77
    corrections and insertions, 476
    first page: heading and title, 475
    margins, 475
    page numbers, 475
  research paper, sample, 477–86
mode, in statistics, 313
modifiers
  business, 170–71
  humanities, 141–42
  natural sciences, 128
  social sciences, 154–56
movement, visual, 396–97
Mullins, Carolyn J., cited, 272
Myers, Greg, cited, 127, 184, 186

"name-year" citation system, 448
narrowing, 3–8
  basics, 3
  complications, 4–5
  from subjects to topics, 3
  from topic to thesis in humanities, 13–14
  topics, 4
Nature, 187
Neu, R. E., cited, 287–88
New England Journal of Medicine, 254, 256, 354–56

nouns
  business, 167
  humanities, 138–39
  natural sciences, 124–25
  social sciences, 151–52
nursing, 380–84
Nursing, 383
Nursing Management, 382
Nursing Research, 327, 381

Oberlender, Robert, et al., cited, 247
Odell, Lee, Dixie Goswami, and Doris Quick, cited, 122
"The On-Line Visual Literacy Project," 393
organization, 197–203
  basics, 198
  complications, 201–03
  large-scale. *See* large-scale organization
  models, 198–200
  nontraditional adaptations, 287–90
  small-scale. *See* small-scale organization
  traditional adaptations, 286–90
Out of My Later Years, 182

parallelism, 172
parts of a table, figure 14.8, 422
passive voice, 119
pattern, 7–8
perspective, visual 395–96
Peterson, Carla, cited, 100
photographs, 430–31
pictograms, 391–92, figure 13.1
pie charts, 427–28; figures 14.15, 14.16
plagiarism, 448, 461
Pollow, Rachel L., et al., cited, 381
Popper, K. R., cited, 142, 188
positivism, 303
A Primer of Visual Literacy, 393
problem-solving structure, 215–16
Proceedings of the Society for Experimental Biology and Medicine, 348
pronouns
  business, 168–69
  humanities, 139
  natural sciences, 125–26
  social sciences, 152–53
Psychological Science, 326
Psychology Today, 438, 439
Publication Manual of the American Psychological Association, cited, 56, 62, 271, 273, 346, 414–15, 422
publishing bibliographies, 460
Purcell-Gates, Victoria, cited, 189
purpose, 2, 184–85, 445, 446
  in business writing, 165–67
  as determiner of detail in business writing, 367–69

qualitative research, 10, 53, 304–08, 320–23
  amount of detail, 327–28
  definition, 304–05
  use of detail, 320–23
quantitative research, 10, 53, 304–19
  amount of detail, 325–27
  definition, 304
  use of statistics, 308–19
    drawing conclusions, 314–16
    examples, 316–18
    measurement scales, 311
    measuring, 311–12
    organizing, summarizing, and presenting, 312–14
    sampling, 310–11

random sample, in statistics, 310
Readers' Guide to Periodical Literature, 454–55
Reliability and Validity in Qualitative Research, 321
Research in the Teaching of English, 184, 189
Results. *See* IMRAD plan
review essays, 32, 33, 38
The Review of Politics, 268
"The Rhetoric of Literary Criticism," 11, 330
Roberts, Mary Louise, cited, 17, 21
Rosaldo, Renato, cited, 53
Rymer, Jone, cited, 245–46

sampling, in statistics, 310–11
Sanborn, Geoffrey, cited, 154
saturation, visual, 398
scale, visual, 394–96, 408, figure 13.5
Scientific American, 182, 438, 439
scientific facts, 344–46
Selvin, Hanan C., and Everett K. Wilson, cited, 149–50
serifs, 409
shading, visual, 395–96
Shaping Written Knowledge, 152
Sheehy, Eugene P., 451
Shore, Milton F., cited, 98
Shreider, Julius, cited, 103
signs, figure 13.19, 404

small-scale organization
  business, 215–17
  humanities, 236–39
  natural sciences, 253–58
  social sciences, 276–79
"SOAP" note, in nursing, 382–83
Social Problems, 183, 186
Social Worlds of Children Learning to Write in an Urban Primary School, 307
"Solo and Cycle in African-American Jazz," 333, 340, 341
spacing, as a visual feature of texts, 408–09
specialized indexes, 455–56
standard deviation, in statistics, 313–14
statistical significance, 315
statistical table, figure 14.7, 421
statistics, in quantitative research, 308–19
Stearns, Stephen C., Marcel Kaiser, and Elke Hilleshiem, cited, 36, 250
"Stories and Styles," 184, 186
style
  formal, 120
  informal, 119–20
  See also diction, modifiers, nouns, pronouns, tone, verbs
style manuals, 531
Super, R. H., cited, 17
Swales, John S., and Hazem Najjar, cited, 272

tables, 419–24, figure 14.11
Tainted Truth: The Manipulation of Fact in America, 319
techniques for creating informal and formal tone, figure 14.5, 420
Tennyson, Alfred, 232
text styles, 411–12
texture, visual, 398
thesis
  definition, 5
  embryonic, 16
  establishing thesis, 5–6
  explicit, 6, 15
  in humanities, 14
  implicit, 6, 15
  origin, 29
  placement, 6
  versus hypothesis, 9
titles
  as adaptations, 188
  natural sciences, 33
Todorov, Tzvetan, cited, 100
tone, 111, 116–17
  basics, 116
  business, 172–74
  complications, 117
  humanities, 143
  natural sciences, 130
  social sciences, 157
  visual, 397
topics, 3, 14
  business, 74–76
  humanities, 11–12
  natural sciences, 29–31
  social sciences, 52–55
topoi, 11
Toulmin, Stephen, Richard Rieke, and Allan Janik, cited 11, 31, 141, 380
transitions, 203–04
  list of, 204
Trevino, Linda Klebe, and Donal McCabe, cited, 288–89
triangulation, 55, 308, 374
Tufte, Edward R., cited, 442
typical format
  in the humanities, figure 15.3, 437
  in the natural sciences, figure 15.2, 437
  in the social sciences, figure, 15.1, 436
  of texts in the disciplines, figure 14.1, 406

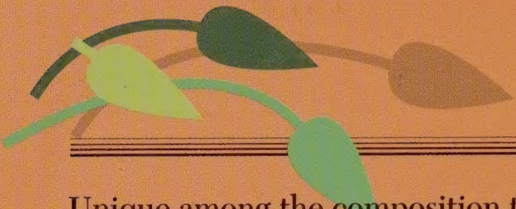
Uncertainty Principle, 320–21

Vandal, Gilles, cited, 289, 376
Vande Kopple, William, cited, 124
Van Ghent, Dorothy, cited, 19
validity, in statistics, 312
verbs
  business, 169–70
    active voice, 169–70
    linking verbs, 169–70
    mood, 170
    passive voice, 169–70
    tense, 169
  humanities, 140–41
    active voice, 141
    linking verbs, 141
    passive voice, 141
    tense, 140
  natural sciences, 126–28
    active voice, 127–28
    linking verbs, 127–28
    passive voice, 127–28
    tense, 126–27
  social sciences, 153–54
    active voice, 154
    linking verbs, 154
    passive voice, 154
    tense, 153–54

vertical white space, figure 14.4, 417
visual axes, figure 13.8, 397
The Visual Display of Quantitative Information, 442
visual dividers, 412–14
visual literacy, 387
visual rhetoric, 387
voice, 111, 115–116, 185
  basics, 115
  complications, 115–116

Waldrop, M. Mitchell, cited, 97, 98
Walvoord, Barbara E., et al., cited, 74, 123, 189, 214, 245
Ways with Words: Language, Life, and Work in Communities and Classrooms, 322
white space, 416–17, figure 14.3
Wildbur, Peter, cited, 408
Wilde, Richard, cited, 393
Woman's Day, 174
working bibliography, 453–54
Writing for Social Scientists, 157

Zaller, John, and Stanley Feldman, cited, 57, 152, 155



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ISBN 1-55934-460-1
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Mayfield Publishing Company
800-433-1279